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COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 27] March, 1957 [No. 3

DISEASES CAUSED BY BACTERIA AND FUNGI

SCHMIDT, J. (1956). Vergleichende Untersuchungen über das Hyaluronidasebildungsvermögen von Mastitisstaphylokokken und pyogenen Staphylokokken aus anderen eitrigen Prozessen. **[Comparison of hyaluronidase formation by staphylococci from human mastitis and staphylococci from other purulent conditions.]** — *Zbl. Bakt.* (*Orig.*) **166,** 353-366. [English, French and Russian summaries.] **650**

S. compared hyaluronidase production of staphylococci from human mastitis, and from other purulent conditions, with that of saprophytic strains. All except 2 of the 157 pathogenic strains, tested by the viscosity reducing test, produced hyaluronidase but no quantitative differences were demonstrable between 63 strains (from human mastitis), and the 58 other strains. No hyaluronidase was produced by the 25 saprophytic strains examined, which led the author to conclude that the presence of this enzyme is closely related to the pathogenicity of staphylococci.—F. K. LEEB.

FARZALIEV, M. M. & GANIEV, T. K. (1955). **[Infectious mastitis of sheep and its control.]** —*Trud. XL Plenum vet. Sect., Akad sel'skokhoz. Nauk imeni Lenina.* Stavropol, 1953. pp. 106-112. [In Russian.] **651**

Gangrenous mastitis of lactating ewes on 6 farms in Azerbaijan was caused by *Micrococcus gangrenosae ovis* (*Staph. pyogenes*). The highest incidence was during April and May. 2·4% of all sheep were affected in 1952, and 30·4% of those affected died or had to be slaughtered. Infection was reproduced by intramammary inoculation of the strains isolated.

—R.M.

HOWELL, D. G. (1956). **The continuation of infection with *Streptococcus agalactiae* through the dry period in the cow.** — *Vet. Rec.* **68,** 532. **652**

Seven cows which were dried off when known to be infected in one quarter with one of two strains of *Str. agalactiae* yielded the identical strains of the organism from the same quarters on coming into lactation after dry periods lasting from 12–53 weeks.

—M. B. HAWKSLEY.

PIER, A. C., SCHALM, O. W. & HAGE, T. J. (1956). **A radiographic study of the effects of mechanical milking and machine vacuum on the teat structures of the bovine mammary gland.**—*J. Amer. vet. med. Ass.* **129,** 347-351. **653**

A radiographic study of the action of milking machine teat cups on the teat structure. Improper use of negative pressure, worn out pulsators, perforated pulsator hoses, and deteriorated rubber linings constitute potential dangers in mechanical milking and are closely related to a high incidence of mastitis.

—F. K. LEEB.

GRINI, O. & KOPPANG, N. (1956). Streptokokkinfeksjon hos småfe. **[Streptococcal infection in sheep and goats.]**—*Nord. VetMed.* **8,** 701-710. [In Norwegian. English and German summaries. Abst. from English summary.] **654**

A disease affecting sheep and goats of all ages in various parts of Norway was characterized clinically by a nasal discharge, a cough, anorexia and listlessness. Mortality in some instances was high, death supervening in 1–4 days. P.M. findings included catarrh of the repiratory tract, pneumonia, fibrinous pleurisy, petechial haemorrhages in the epicardium and endocardium, and slight enlargement of the spleen. Haemolytic streptococcus, Group C, was isolated from the spleen and lungs. This caused the death of a sheep 3 days after nasal instillation. The disease could not be reproduced experimentally by a filtrate of infected material. Penicillin was considered effective *in vitro* and *in vivo*. The organism was compared with a strain isolated from cases of pneumonia in pigs. Complement-fixing antibodies for the

latter were demonstrated in the blood of naturally and artificially infected sheep. The two strains were antigenically similar but appeared to be species specific.

SHTAN'KO, V. A. (1955). **[A disease of camels characterized by purulent lymphadenitis.]**—*Trud. 7 Sess. Akad. Nauk Turkmen S.S.R., Ashkhabad,* 1954. pp. 388-390. [In Russian. Abst. from abst. in *Referat. Zh., Ser. Biol.* No. 14. p. 471. (1956).] **655**

Streptococci isolated from intact abscesses of the subcutaneous lymph nodes of affected camels resembled *Str. equi* in their morphological and biochemical properties.—R.M.

AGRIMI, P. (1956). Studio sperimentale su alcuni focolai di streptococcosi nel pollo. **[Experimental study of streptococcal infection in fowls.]** — *Zooprofilassi.* **11,** 491-501. [English and French summaries.] **656**

The author gave a short description of six outbreaks of streptococcal septicaemia in fowls in Tuscany. The mortality in adults was 5–10%, in chicks 50–60%, and in embryos of 16–19 days about 70%. The strains isolated were *Str. zooepidemicus* (one case) and β-haemolytic *Str. faecalis* (five cases).—I. W. JENNINGS.

I. ALSTRÖM, I. (1956). Jämförelse av effekten av penicillin och preparatkombinationer innehållande penicillin på juverpatogena mikroorganismer *in vitro.* **[Comparative studies *in vitro* of the effect of penicillin and of other chemotherapeutic agents against mastitis bacteria.]** — *Nord. VetMed.* **8,** 734-746. [In Swedish. English and German summaries.] **657**

II. ALSTRÖM, I. (1956). Jämförelse av effekten av antibiotika och vissa nyare kemoterapeutika på juverpatogena mikroorganismer *in vitro.* **[Comparative studies *in vitro* of the effect of antibiotics and certain new chemotherapeutics against mastitis bacteria.]**—*Ibid.* 747-754. [In Swedish. English and German summaries. Absts. from English summaries.] **658**

I. Penicillin was effective against *Streptococcus agalactiae, Str. dysgalactiae, Str. uberis* and *Staphylococcus aureus,* but not against *Bact. coli* and *Pseudomonas pyocyanea,* in a milk medium. Addition of streptomycin did not enhance the effect. The addition of certain sulphonamides or of streptomycin produced some effect against *Bact. coli* but not against *Ps. pyocyanea.*

II. Ten antibiotics, 2 nitrofurazone derivatives and "Hibitane" [bis-*p*-chlorophenyldiguanidohexane] were tested *in vitro* for their action on the organisms mentioned in I. Penicillin was most effective against Gram-positive organisms while terramycin and tetracycline were most effective against Gram-negative organisms. Results were approx. the same in skim milk as in blood agar cultures.

ŠEBETIĆ, Č. & ĐORĐEVIĆ, Ž. (1956). O vrednosti nekih uobičajenih dezinfekcionih sredstava kod antraksa. **[Evaluation of some common disinfectants against anthrax.]** — *Vet. Glasn.* **10,** 433-439. [In Croat. German summary.] **659**

Anthrax spores on concrete floors and whitewashed walls were killed by a 5% chlorine soln. within 60 min. and on metal objects by boiling for 30 min. in a 2% soln. of sodium carbonate. Chlorinated lime killed them within 30 min.; submersion in a 4% formalin soln. within 24 hours; flaming of infected metal and wooden objects with a blow-lamp killed them immediately.

They remained alive on concrete floors and walls after exposure for 24 hours to a 5% soln. of a mixture of carbolic acid-cresol-sulphuric acid, and on metal objects submerged for 30 min. in a 2·5% soln. of sodium hydroxide, heated to 70°C. Spores on leather and on hemp rope were not killed by submersion for 60 min. in a 5% soln. of corrosive sublimate-carbolic acid or in a 4% soln. of formalin.—E.G.

LAMBRECHTS, M. C., KLUGE, E. B. & HUGO, P. P. (1956). **An instance of high incidence of tuberculosis in ranch cattle in South Africa and certain observations on the single intradermal tuberculin test.**—*J. S. Afr. vet. med. Ass.* **27,** 147-150. **660**

Of 1,075 cattle on 5 farms, 221 adults and 9 calves reacted to the single i/d tuberculin test. The lesions found P.M. in 42 reactors from one farm are listed, together with details of the size and type of the tuberculin reaction. The authors believe that the preponderance of lesions associated with oral infection supports their contention that watering points were the sources of infection.—M. B. HAWKSLEY.

KOVÁTS, J. (1956). Az intravénás tuberkulinpróbával kapcsolatos megfigyelések. **[The intravenous tuberculin test.]**—*Mag. állator. Lapja.* **11,** 172-174. [In Hungarian. English and Russian summaries. Abst. from English summary.] **661**

Of 49 cows which had reacted to the i/d tuberculin test only 18 gave a positive reaction to the i/v test (increase in body temp. exceeding 2°C., systemic and local reactions). Desensitization to the s/c tuberculin test occurred, but

the cows remained sensitive to the i/d test. K. suggested that the i/v test would be of value in cases of disputed warranty and for diagnosis of advanced cases of TB.

PASQUIER, J. F. & KURYLOWICZ, W. (1956). Utilisation de bacilles tuberculeux bovins et humains marqués au C^{14} pour l'étude comparative de l'efficacité de vaccins BCG lyophylisés de diverses origines, injectés par différentes voies. **[Use of C^{14} labelled tubercle bacilli in the study of the efficacy of B.C.G. vaccines.]**—*C. R. Soc. Biol., Paris.* **150,** 281-284. **662**

The effect of vaccinating mice with freeze-dried B.C.G. vaccines prepared from different strains and using various routes of administration were compared by assessing the radioactivity of the mouse organs following the i/v inoculation of live human tubercle bacilli labelled with C^{14}. Unvaccinated mice were used as controls.—M. B. HAWKSLEY.

ROLLE, M. & WIETHE, H. (1956). Bericht über die Versuchsergebnisse der BCG-Schutzimpfung der Rinder gegen Tuberkulose. **[Results of B.C.G. vaccination in cattle in Bavaria.]** —*Berl. Münch. tierärztl. Wschr.* **69,** 378-379. [English summary.] **663**

TB. was eradicated from a severely infected herd of about 200 cattle over a period of 7 years by the removal of calves from their dams at birth and the gradual elimination of positive reactors. Most calves received 2 vaccinations with 50 mg. B.C.G. with an interval of 3–4 months between injections, the first injection being given at the age of 2–12 weeks.—M.G.G.

MONTI, F. (1956). Studio clinico-radiologico di un caso di tbc ossea del gatto trattato con isonicotinidrazide. **[A clinical and radiological study of tuberculous osteo-arthritis (in a cat) treated with isoniazid.]**—*Vet. ital.* **7,** 871-884. [English, French and German summaries.] **664**

M. reported successful treatment with isoniazid of tuberculous osteoarthritis of the carpus in a cat. After clinical cure, checked by X-ray photographs and a decreased sensitivity to the tuberculin test, the cat was killed for P.M. examination, which confirmed that cure was complete.—I. W. JENNINGS.

LABZOFFSKY, N. A., KILLOUGH, E., PERCY, W. J. A. & BELL, J. (1956). **Complement fixing antibodies in tuberculous guinea pigs.** —*Canad. J. Microbiol.* **2,** 461-464. **665**

An antigen prepared from cultures of *Mycobacterium tuberculosis* Strain H 37 Rv by preliminary pyridine extraction followed by ultrasonic disruption of the organisms in saline, was used in complement-fixation tests on serum sampled periodically from 124 g. pigs experimentally infected with the same or other strains of tubercle bacillus. Complement-fixing activity with this antigen was demonstrable during the second or third week of infection, reached a maximum about the seventh week, then remained at this level for some time, or declined. Tuberculin sensitivity was demonstrable at least one week earlier than complement-fixing antibodies.—C. E. RICE.

FEDOSEEV, V. S. (1956). **[Control of avian TB. in poultry farms.]** — *Veterinariya, Moscow.* **33,** No. 9. pp. 26-30. [In Russian.] **666**

F. estimated that 7% of eggs from tuberculous fowls contained avian type tubercle bacilli. When 32 eggs from tuberculous fowls were incubated, only 7 live and apparently healthy chicks were obtained. In further experiments the yolk of 109 eggs was inoculated before incubation with 0·01 mg. of cultures of avian tubercle bacilli, suspended in saline. 7 live chicks were obtained, and they all died from TB. within 15 days of hatching. When the white of 138 eggs was similarly infected, 43 ive and apparently healthy chicks were hatched; they showed no signs of TB. up to 13 months of age. Methods for the control of TB. on poultry farms were discussed, and an example of successful control was given.—R.M.

MOODY, M. D., GOLDMAN, M. & THOMASON, B. M. (1956). **Staining bacterial smears with fluorescent antibody. I. General methods for *Malleomyces pseudomallei*.**—*J. Bact.* **72,** 357-361. **667**

THOMASON, B. M., MOODY, M. D. & GOLDMAN, M. (1956). **Staining bacterial smears with fluorescent antibody. II. Rapid detection of varying numbers of *Malleomyces pseudomallei* in contaminated materials and infected animals.**—*Ibid.* 362-367. **668**

I. *Pf. whitmori* antiserum was prepared in rabbits and the globulin portion was labelled with flourescein isocyanate. Positive staining reactions were obtained with 33 strains of *Pf. whitmori* and 3 of *Pf. mallei* but not with other bacteria. Fresh or fixed air-dried smears of living or dead organisms were stained for 10–15 min. with a 1:2 saline soln. of labelled globulin. The immunological specificity of the staining reaction was confirmed by inhibition and absorption tests.

II. With the aid of labelled globulin it was possible to identify *Pf. whitmori* in smears

from: pure or mixed suspensions containing very small numbers of the organism; experimentally seeded soil; experimentally contaminated material; and tissues of experimentally infected animals.—T.E.G.R.

SÎRMON, E. & MARICA, D. (1956). Acţiunea bacteriostatică a principalelor substanţe antibiotice şi chimioterapice faţă de *B. mallei*. **[Bacteriostatic action of antibiotic and chemotherapeutic agents on *Pfeifferella mallei*.]**—*Probl. Epiz. Microbiol., Inst. Pat. Igien. Anim., Bucureşti*. No. 5. pp. 51-58. [In Roumanian. Abst. from French summary.] **669**

Sulphathiazole exerted a bacteriostatic action on the organism which, compared with other Gram-negative bacilli, was less sensitive to chloramphenicol and nitrofuran. Streptomycin and aureomycin had a marked effect. Penicillin, *p*-aminosalicylic acid and isoniazid were inactive.

WELLMANN, G. G. (1955). **Summaries of experiments in swine erysipelas in Germany.** —*J. Amer. vet. med. Ass.* **127,** 331-333. **670**

An English summary of the author's work on experimental *E. rhusiopathiae* infection in pigs [see *V.B.* **24,** 686 & **25,** 1883], inherited resistance to the disease [*V.B.* **23,** 1149], and its transmission by *Stomoxys calcitrans* and other insects [*V.B.* **23,** 1453 and **22,** 2727].

—A. SEAMAN.

CERNEA, I. & BUTURĂ, I. (1956). Cercetări asupra prezenţei B. rujetului la bovinele sănătoase. **[Incidence of *Erysipelothrix rhusiopathiae* in healthy cattle.]**—*Probl. Epiz. Microbiol., Inst. Pat. Igien. Anim., Bucureşti*. No. 5. pp. 29-34. [In Roumanian. Abst. from French summary.] **671**

The organism was isolated from the tonsils of 9 out of 240 apparently healthy slaughter cattle and its cultural characteristics resembled those of the organism isolated from cardiac vegetations in pigs. Its virulence for mice varied from 10^{-1} to 10^{-5}, death supervening in 5–9 days; in pigeons 0·25–0·5 ml. of culture, injected i/m, caused death in 4–8 days.

—T.E.G.R.

RAINES, T. V. & WINKEL, F. H. (1956). **Erysipelas in pheasants.** — *J. Amer. vet. med. Ass.* **129,** 399-400. **672**

Lameness and black faeces were the principal symptoms in an outbreak of *Erysipelothix rhusiopathiae* infection on a pheasant farm. P.M. examination revealed a friable liver and numerous necrotic foci on the surface of the spleen. There were no further losses after birds in affected groups had been given i/m 50,000 units of procaine penicillin and all other birds vaccinated with a killed vaccine. The authors state that they have since diagnosed *E. rhusiopathiae* septicaemia in a turkey flock in which the organism was resistant to penicillin but sensitive to dihydrostreptomycin, both *in vivo* and *in vitro*.—M.G.G.

STRICKER, F., KOPPEL, Z., GRUNERT, Z. & KARELLOVÁ, J. (1956). Príspevok k výskytu listeriózy zvierat. **[Listeria infection in animals in Slovakia.]**—*Vet. Čas.* **5,** 352-355. [In Czech. German and Russian summaries.] **673**

Since listeriosis was first diagnosed in Slovakia in 1950 in two fowls, incidence, particularly in sheep, had increased markedly. Up to 1956 there had been 14 outbreaks in sheep, mostly of the cerebral form, with a mortality of about 7%. The septicaemic form was observed in one lamb, one calf, one pig and eight fowls. Abortion in three cows was associated with the infection. A total of 33 strains was isolated and typed.—E.G.

KHALIMBEKOV, M. M. (1955). **[Listeria infection in sheep and goats.]**—*Trud. XL Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina*. Stavropol, 1953. pp. 68-77. [In Russian.] **674**

In Azerbaijan *E. monocytogenes* infection of sheep and goats occurred mainly in August and September, on farms bordering the River Kura. In these districts 0·5–3% of sheep and goats were affected; it was rarely observed on semi-desert pastures more than 15–20 km. away from the river. Symptoms, lesions, and transmission experiments were described.—R.M.

CARTER, G. R. (1956). **Some remarks on shipping fever in Canada.**—*Canad. J. comp. Med.* **20,** 289-293. [French summary.] **675**

According to the author "shipping fever" of cattle as seen in central Canada could be defined as the occurrence of pulmonary infections during or after transit. He also feels that the stresses incidental to travel play a prominent part in the condition. *Pasteurella multocida* (*Past. septica*) and *Past. haemolytica* are considered to be the principal aetiological agents, although corynebacteria and pleuropneumonia-like organisms may also be involved. Viruses and rickettsia are looked upon merely as forerunners of the principal agents. It was also observed that cattle with chronic pulmonary infections were particularly susceptible to "ship-

ping fever". C. suggests that the diagnosis of shipping fever should be based on clinical symptoms in general rather than solely on the elevation of temperature to 104°F. or more. Treatment of shipping fever with sulphamethazine, streptomycin and broad spectrum antibiotics is generally efficacious. Failure to incorporate *Past. haemolytica* in the so-called "haemorrhagic septicaemia bacterins" (killed culture vaccines) makes their use in the prophylactic treatment of shipping fever as it occurs in Canada of dubious value.—J. L. BYRNE.

CARTER, G. R. (1956). **A serological study of** *Pasteurella haemolytica.—Canad. J. Microbiol.* **2,** 483-488. **676**

A soluble capsular substance, polysaccharide in nature, was prepared from each of two strains of *Past. haemolytica* from Canadian cattle with "shipping fever". Type O human r.b.c. treated with dilutions of this polysaccharide were agglutinated by specific immune sera produced in rabbits or calves. Haemagglutination tests made in this manner with r.b.c. sensitized with saline extracts containing capsular substance derived from 51 Canadian field strains and a number of strains of *Past. haemolytica* from the U.S.A., Great Britain, and Europe, indicated that these were serologically homogeneous. This conclusion was supported by the results of conventional agglutination tests.—C. E. RICE.

CARTER, G. R. (1956). **Studies on pneumonia of cattle. I. Experimental infection of calves with** *Pasteurella haemolytica.—Canad. J. comp. Med.* **20,** 374-380. [French summary.] **677**

Of 19 calves exposed to young primary cultures of *Past. haemolytica,* principally by the intranasal route, 8 developed mild to severe infections. *Past. haemolytica* was recovered P.M. from animals showing clinical signs of pneumonia. Furthermore pathological and bacteriological studies of the lungs of such calves suggested that those in which the more severe infections occurred had been affected with a chronic, inapparent pneumonia before exposure. By means of haemagglutination tests it was possible to demonstrate the presence of antibodies for *Past. haemolytica* in the sera of the experimental calves only after they had been exposed to the micro-organism.—J. L. BYRNE.

NIKIFOROVA, N. M. (1955). **[Specific prophylaxis of haemorrhagic septicaemia in sheep.]** — *Trud. XL Plenum vet. Sect., Akad. sel'skokhoz Nauk imeni Lenina.* Stavropol, 1953. pp. 132-138. [In Russian.] **678**

Pasteurella immune serum, used prophylactically or therapeutically, failed to control haemorrhagic septicaemia in sheep. For example, on one farm there were 25,300 cases during 1949/50, 6,500 of them fatal, despite 9,400 therapeutic and 32,300 prophylactic inoculations of immune serum. The following year 33,700 sheep on the same farm were inoculated with alum-precipitated polyvalent pasteurella vaccine prepared at the State Institute for the Control of Veterinary Preparations [see *V.B.* **26,** 1134]: there were 34 cases, 2 of them fatal. On this and other farms more than 200,000 sheep were vaccinated during 1952 with good results.—R.M.

MAGLIONE, E. & CERETTO, F. (1956). Contributo allo studio della pseudotubercolosi dei roditori. **[Pseudotuberculosis of rodents. I.]** —*Ann. Fac. Med. vet. Torino.* **5,** pp. 9-40. [English and French summaries.] **679**

MAGLIONE, E. (1955). Contributo allo studio della pseudotubercolosi dei roditori. II. **[Pseudotuberculosis of rodents. II.]** — *Ibid.* pp. 241-253. [English and French summaries.] **680**

I. An outbreak of the disease occurred among g. pigs in a laboratory. In some cases there was sudden death without any symptoms; in others death was preceded by profuse diarrhoea, rapid loss of condition, thirst, dyspnoea and "staring" and ruffled coat. P.M. examination revealed greyish-white nodules (varying in size from that of a millet seed to a chick pea), surrounded by a zone of hyperaemia, in various organs (especially the liver and spleen) and lymph nodes. The lesions resembled T.B. nodules and contained a yellowish-grey turbid fluid surrounded by a zone of caseation and enclosed in a fibrous capsule; there was no calcification. *Past. pseudotuberculosis* was isolated from the lesions.

II. In a comparative study of streptomycin, terramycin and aureomycin in the treatment of experimental infection in g. pigs, only streptomycin was effective.—T.E.G.R.

GOGOAȘĂ, V. (1956). Frecvenţa purtătorilor de *Pasteurella* într-o enzootie de holeră aviară la raţe în plină evoluţie. **[Frequency of carriers in an outbreak of pasteurellosis in ducks.]**—*Probl. Epiz. Microbiol., Inst. Pat. Igien. Anim., Bucureşti.* No. 5. pp. 13-18. [In Roumanian. Abst. from French summary.] **681**

At the height of infection the organism was isolated from the nasal discharge of 46% and from the ocular discharge of 20% of the birds.

Contravention of the regulations restricting the movement of diseased birds is considered to be the cause of high incidence and heavy mortality.—T.E.G.R.

AJMERITO, G. C. & RAGNI, M. (1955). La terapia della cheratocongiuntivite infettiva dei bovini con cloroamfenicolo associato all'idrocortisone. [**Combined chloramphenicol hydrocortisone therapy in infectious keratoconjunctivitis of cattle.**]—*Ann. Fac. Med. vet. Torino.* **5**, 235-239. **682**

The aetiology and treatment of the disease are briefly discussed. A collyrium containing 1% chloramphenicol and 0·5% hydrocortisone acetate is considered the medicament of choice. The collyrium was tested on 18 animals; it was considered superior to chloramphenicol alone and effected a complete cure in a few days.

—T.E.G.R.

EWING, W. H., TATUM, H. W., DAVIS, B. R. & REAVIS, R. W. (1956). **Studies on the serology of the *Escherichia coli* group.**—pp. 42. Atlanta, Georgia: U.S. Dep. Hlth, Educ. & Welfare, Publ. Hlth. Serv. **683**

Escherichia coli is an awkward name, but international agreement compels one to accept it in place of the old familiar title *Bacterium coli*. This bacterium is in reality a collection of biochemical and serological types and within the past 15 to 20 years it has become customary to pay especial attention to these sero-types as some call them. Epidemiological studies demand this and it is becoming clear that some types are common in certain geographical areas or are associated with certain diseases. Their indentification depends upon the presence of different antigens including the "O" somatic ones which are heat stable, the "K" which are also somatic and occur as capsules, envelopes or sheaths and inhibit the agglutination of living suspensions by "O" sera, and the "H" flagellar ones which are heat labile. These antigens are designated by numbers and specialists who work with them consult the international centre at Copenhagen; this presents confusion.

During the past few years many workers, including the authors of this paper, have added to the studies of Kauffmann and his colleagues. The studies herewith recorded contain useful tables on the "O" antigens and the relationships between the different groups of which there are at least 137. This enables one to prepare "pooled" sera for use in slide tests, and in single and multiple tube tests for the typing of strains. Many of the 79 antigens are specific and not significantly related to any other; "pooled" sera for their determination may, however, be prepared and are useful for preliminary examinations. The majority of the 40 "H" antigens are specific, but "pooled" sera may be valuable in single tube agglutination tests for preliminary work.

Relationships between *E. coli* and other Gram-negative bacteria have been recorded and the authors discuss briefly the relationships between *E. coli* and *Shigella* and between *E. coli, Shigella* and Providence group cultures.

These records are a valuable adjunct to knowledge of these micro-organisms and to our concept of the biochemical and serological relationships within the whole enteric group of bacteria. Such studies are useful in epidemiological investigations, but the authors relate their findings almost entirely to infantile diarrhoea. A brief account might have been given of the association of *E. coli* with white scours in calves which has been known since 1893. Felix is criticized because he disagrees with some of the views of the authors and of Kauffmann; he should have been praised for his discovery of the "Vi" antigen and of its significance. Not everyone despaired "at the heterogenicity among *E. coli* cultures" before 1943. In 1936 the Second International Congress for Microbiology was held in London and there was only one paper on the serological classification of strains of *E. coli;* these had been recovered from diseased calves. At the Sixth Congress in 1953 the section on Enterobacteriaceae attracted almost a score of papers on *E. coli,* its antigenic structure and its association with intestinal disorders.

These criticisms are minor ones and do not detract from the value of the observations which these authors have made and recorded.

—R. LOVELL.

STRICKER, F. & GRÚNERT, Z. (1956). *B. pyosepticum viscosum equi* (*Shigella equirulis*) v prípadoch akútneho horúčkového ochorenia dospelých koní na Slovensku. [**Isolation of *Bact. viscosum equi* from horses with an acute, febrile disease.**]—*Vet. Čas.* **5**, 260-266. [In Slovak. German and Russian summaries.] **684**

The authors described an acute septicaemic disease of high mortality which had occurred in adult horses in several districts of Slovakia. Symptoms included fever, diarrhoea, general malaise, inappetence, staggering gait and hyperaemia of the mucosae. *Post mortem,* there were petechial haemorrhages in serous membranes, subcutaneous tissues, tracheal and intestinal mucosae and in the pia mater and cerebral

parenchyma. Mesenteric lymph nodes were enlarged and hyperaemic. There was lung oedema and subcapsular-haemorrhages in the spleen. *Bact. viscosum equi* was isolated from 40% of samples of liver, lung and spleen material from 30 horses sent for examination to the Bratislava Veterinary Institute.—E.G.

QUINLAN, J. & CANHAM, A. S. (1956). **An outbreak of gastro-enteritis in Thoroughbred foals caused by** *Salmonella typhi-murium*.—*J. S. Afr. vet. med. Ass.* **27,** 141-145. **685**

Eleven out of 28 foals on a stud farm were affected with acute gastro-enteritis and 8 died despite treatment. Grain contaminated with rat faeces was believed to be the source of the *S. typhi-murium* infection.—M. B. HAWKSLEY.

MONTEVERDE, J. J. & GARBERS, G. V. (1956). Infecciones debidas a *Salmonella abortus-equi* en la República Argentina. **[Diseases caused by** *S. abortus-equi* **in Argentina.]**—*Publ. Fac. Agron. B. Aires.* No. 7. pp. 102. **686**

The authors reported on a fairly exhaustive bacteriological study of 128 strains of *S. abortus-equi* isolated in the Argentine from mares, foals and foetuses. They described five outbreaks of salmonella abortion in mares, of variable intensity, reaching in one case an abortion rate of 98·1%. Investigations in three separate areas showed that a marked reduction in fertility following *S. abortus-equi* infection in mares was more likely to be due to secondary infection by *Streptococcus pyogenes animalis*. Outbreaks of abortion were accompanied by numerous cases of pyosepticaemia and polyarthritis in the foals. Although these cases were resistant to treatment, haemotherapy and bacteriophage treatment were recommended as likely to produce successful results. Abscess formation was seen in two yearling foals, one over the sternum, the other over the lower ribs. Both animals were afebrile and maintained their appetite, but the periods required for recuperation were lengthy.

—I. W. JENNINGS.

SEVERA, L. (1955). Experimentální studie bakteriofágie u Salmonelly cholerae suis. [*Salmonella cholerae-suis* **bacteriophage.**]—*Sborn. vys. Šk. zemědělsk. les. Fak., Brno, Ser. B.* **3 (24),** No. 2. pp. 145-158. [In Czech. French and Russian summaries.] **687**

S. isolated 3 strains of bacteriophage from faeces of 3 piglets which had died from *S. cholerae-suis* infection. Activity against *S. cholerae-suis* was enhanced by 10 passages of the phages in broth, and diminished against *S. paratyphi B* and *S. enteritidis*.

Mice, given 0·25 ml. of bacteriophage orally up to 12 hours after infection with an equal dose of virulent *S. cholerae-suis* culture, survived, whilst doses of 0·5 ml. protected them against 1 ml. of culture only when given up to 6 hours after infection. Mice, given 0·3 ml. of phage up to 36 hours after infection with 0·25 ml. of broth culture, survived. S/c inj. of bacteriophage did not confer protection.—E.G.

BRILL, J. & GOŁĘBIOWSKI, S. (1956). Wartościowanie reaktorów serologicznych w stadach drobiu o niskim procencie zakażenia *S. pullorum*. **[Serological reactions in flocks with low percentage of** *Salmonella pullorum* **infection.]** —*Roczn. Nauk rol. Ser. E.* **67,** 339-356. [In Polish. English and Russian summaries.] **688**

P.M. and bacteriological examinations on 40 fowls that were positive or doubtful reactors in the agglutination test revealed that 45·5% were infected; in 27% the agglutination titre persisted after recovery from infection; 22·7% gave a non-specific reaction and 9·1% were infected with atypical strains. The authors consider that infected, bacteriologically positive birds, and recovered, bacteriologically negative ones, may for some time show the same titre. The presence of degenerative changes in the ovary is usually indicative of a carrier, while similar lesions in the liver only, are found in fully recovered birds. They recommend routine P.M. and bacteriological examination of positive and doubtful reactors in flocks in which the percentage of reactors is low (up to 1%).

—M. GITTER.

BLANCO LOIZELIER, A., BARRERA POZAS, J. & VINDEL CAURIN, J. A. (1956). Variaciones antigénicas de la *Salmonella pullorum*. **[Antigenic variation in** *S. pullorum*.**]** — *Rev. Patronato Biol. anim., Madrid.* **2,** 269-277. **689**

Of 206 strains of *S. pullorum* isolated in Spain the majority (just under 70%) had the antigenic formula IX, XII_2, XII_3. (+ +, +, + For accuracy in diagnosis, therefore, agglutination test antigens in that country should be prepared from strains with the antigenic formulae IX+ +, XII_2+ +, XII_3+ or IX+ +, XII_2+, XII_3+ +.—I. W. JENNINGS.

JORDAN, F. T. W. (1956). **The transmission of** *Salmonella gallinarum* **through the egg.**—*Poult. Sci.* **35,** 1019-1025. **690**

S. gallinarum was isolated from eggs of 4 hens that had recovered, naturally or with nitrofurazone treatment, from fowl typhoid 1–18 months previously. The organism was not found

in the eggs of 4 hens that had recovered with chloromycetin treatment, but it was isolated from the ovaries of 2 of them. All birds were positive to the rapid slide agglutination test.
—M.G.G.

JORDAN, F. T. W. (1956). **The occurrence of *Salmonella gallinarum* in the faeces in fowl typhoid.**—*Poult. Sci.* **35,** 1026-1029. **691**

S. gallinarum was isolated from the droppings of only 4 out of 13 acutely infected fowls and from the cloaca of only 15 out of 47 similar fowls. However, cloacal swabs from 11 birds which had died of acute fowl typhoid all yielded the organism. It was isolated from the cloaca of only one out of 36 recovered birds.—M.G.G.

HARBOURNE, J. F. (1956). **The treatment of chronic carriers of *Salmonella gallinarum* with furazolidone.** — *Vet. Rec.* **68,** 839-841. [Author's summary modified.] **692**

Furazolidone given in the mash at a concentration of 0·04% for 12 days reduced the rate of infection with *S. gallinarum* in a small group of fowls, which had given a positive reaction to the rapid blood test; but some of the treated birds remained carriers, and some had lesions of a chronic nature in the ovary. Such treatment could not therefore be recommended.

TRUSCOTT, R. B. (1956). ***Salmonella moscow* isolated from ducks in Ontario.**—*Canad. J. comp. Med.* **20,** 345-346. [French summary.] **693**

Twenty-two ducklings in a group of 700 died suddenly at about 12 days of age. At P.M. examination the livers were bronze coloured and had small grey areas of focal necrosis. The air sacs were somewhat opaque with yellow fibrinous plaques. Several of the livers, spleens and hearts were cultured and *S. moscow* was recovered. The addition of furazolidone to the feed at the 0·0165% level plus strict sanitation in the pens controlled the infection. There was no serious mortality in later broods.
—J. L. BYRNE.

PACHECO, G. & THIAGO DE MELLO, M. (1956). Brucelose. **[Brucellosis.]** — *Monogr. Inst. Osw. Cruz.* No. 7. pp. 727. **694**

A comprehensive review covering the entire history of knowledge of the disease from the early days of Bruce, Bang and Evans, to the present day. The authors have covered every aspect of the subject, mainly for the medical research worker, but the chapter on animal brucellosis (61 pages) is in itself a valuable contribution. In addition to a general discussion of the importance of brucellosis, it gives a summary of the recorded cases of the disease in Brazil. These, like human infections, have been found mainly in the eastern coastal districts, particularly Rio Grande do Sul, São Paulo, Rio de Janeiro, Minas Gerais and Bahia. The bibliography covers some 160 pages and there is a general index.—I. W. JENNINGS.

ALEANDRI, M. & GARGANI, G. (1956). Descrizione di un focolaio di brucellosi da *Br. abortus* in provincia di Firenze ed indagini collaterali sul personale di stalla. **[Brucellosis in cattle and farm personnel in Florence.]**—*Zooprofilassi.* **11,** 427-434. **695**

In a herd of 167 adult cattle, 69 reacted positively to the agglutination test for brucellosis. A strain isolated from an aborted foetus proved to be *Br. abortus* but was serologically atypical.

Among 15 of the farm personnel there were 2 serologically positive cases of brucellosis and 2 clinical cases. Here again, an intermediate strain of *Br. abortus* seemed to be involved.—I. W. JENNINGS.

HAJDU, Š. (1956). Prispevok k metodike a diagnostickej spolahlivosti aglutinačného a komplementfixačného testu na brucelózu hovädzieho dobytka a ošípaných. **[Technique and reliability of agglutination and complement-fixation tests in bovine and porcine brucellosis.]**—*Vet. Čas.* **5,** 283-296. [In Slovak, German and Russian summaries] **696**

The c.f. test was considered more reliable than the agglutination test for the diagnosis of *Brucella* infection in cattle and pigs, because of the frequent occurrence of non-specific agglutinins. Details were given of mass examination by the c.f. reaction combined with the agglutination test and Coombs test.—E.G.

GUREVICH, R. M. & YAKOVLEVA, A. G. (1956). **[Post-infection immunity in ovine brucellosis.]** — *Proc. Lenin Acad. agric. Sci.* **21,** No. 8. pp. 7-11. [In Russian.] **697**

An isolation flock was made up of 525 sheep which had reacted to tests for brucellosis: 88% of them reacted to the complement-fixation test, 70% to the brucella lysate allergic test, and 20% to the agglutination test. After 6 months only 43% reacted to one or more of these tests, and after 2 years only 10% reacted. Abortion due to brucellosis was extremely rare after sheep had lost their reactions. Attempts to re-infect sheep which had recovered spontaneously by the s/c inj. of 15,000 *Br. melitensis* organisms succeeded in 3 out of 20 cases.—R.M.

ROOTS, E. & STRAUCH, D. (1956). Über das Vorkommen von Brucella melitensis bei Schafen, die serologisch und allergisch negativ, zweifelhaft oder positiv reagieren. **[Incidence of *Br. melitensis* in sheep yielding negative, doubtful or positive serological and allergic tests.]** — *Berl. Münch. tierärztl. Wschr.* **69**, 413-416. [English summary.] **698**

Tests for *Br. melitensis* infection were carried out on 20 infected sheep during observation periods of 4–58 weeks. *Br. melitensis* was recovered from the urine only at irregular intervals and blood cultures were constantly negative. Only 4 animals were positive to allergic and serological tests. The organism was recovered from the organs of 14 animals, in one of which brucellosis had been diagnosed 58 weeks previously. All except 3 were positive to the allergic test. The authors concluded that at least the agglutination and allergic tests should be used in combination for the diagnosis of brucellosis in sheep. The allergic test may not reveal recently infected animals and a doubtful result of the agglutination test may be resolved by the c.f. test.—M.G.G.

MUNDT, W. (1956). Gedanken zum Brucelloseproblem im Hinblick auf die Fleischbeschau. **[Brucellosis and meat inspection.]** — *Berl. Münch. tierärztl. Wschr.* **69**, 397-400. **699**

M. proposed that in the interests of public health, brucellosis in sheep should be a notifiable disease. There should be a systematic campaign against the disease throughout Germany. He urged the drafting of new and stricter regulations for the disposal of positive reactors. The meat should be subjected to bacteriological examination and the wool regarded as a potential source of infection.—M.G.G.

VON WENDT, J. (1956). **Serological examinations for leptospirosis among domestic animals in Sweden.**—*Nord. VetMed.* **8**, 711-726. [In English. German and Swedish summaries.] **700**

During 1946–55 blood samples from 4,871 dogs were examined at the State Institute of Veterinary Medicine, Stockholm. Of these 69 were positive for *L. canicola*. Samples from 588 horses were also examined and of these 75 were positive for *L. icterohaemorrhagiae* and 23 were doubtful. The author carried out a survey during 1955–56. Of 412 samples from horses 51 agglutinated *L. icterohaemorrhagiae* at 1:400 and over; 145 at 1:300; 119 at 1:30; and the rest were negative. Of 1,000 samples from pigs 42 reacted to *L. icterohaemorrhagiae* at 1:400 and over (17 at 1:400 and 25 at higher dilutions). Samples from 555 cattle gave inconclusive results.—T.E.G.R.

KEMENES, F. (1956). Leptospira-típusok hazánkban. **[Leptospira infections of animals in Hungary.]** — *Mag. állator. Lapja.* **11**, 283-287. [In Hungarian. English and Russian summaries. Abst. from English summary.] **701**

Leptospira isolated in Hungary to date include *L. pomona, L. hyos* (*mitis*), *L. sejroe-hebdomadis, L. grippo-typhosa, L. icterohaemorrhagiae* and *L. canicola,* K. isolated 51 strains from the urine of men and animals. Of these 35 were *L. pomona* (17 from pigs, 10 from cattle, 5 from horses, 2 from men and 1 from a rat); 11 were *L. hyos* (all from pigs); and 5 were *L. sejroe-hebdomadis* (1 from a horse, 2 from men and 2 from rats). *L. pomona* was the cause of abortion in pigs, haemoglobinuria, jaundice, fever and sometimes death in calves, and mild infection in adult pigs, cattle and men. *L. hyos* occasionally caused abortion in pigs but usually occurred simultaneously with *L. pomona*. Strains described as *L. icteroanaemiae* Types I and II in the U.S.S.R. are considered to be identical with *L. grippo-typhosa* and *L. pomona* respectively.

KELEN, E. (1956). A hortobágyi bovin leptospira-törzs összehasonlítása Szovjetunióból származó leptospira-törzsekkel. **[Hungarian strains of leptospira from cattle compared with those from the U.S.S.R.]** — *Mag. állator. Lapja.* **11**, 287-291. [In Hungarian. English and Russian summaries. Abst. from English summary.] **702**

From the results of serological tests it is concluded that the "Hortobágy" strain isolated from cattle in Hungary and the "Moniakow" strain isolated from cattle in the U.S.S.R. are identical with *Leptospira pomona,* which is the chief cause of infection in cattle in the two countries.

MOORE, T. & RICE, C. E. (1956). **Serological investigations of leptospirosis in Canada. I. Introduction and preliminary complement-fixation studies of cattle sera with commercially-prepared *Leptospira pomona* antigen.**—*Canad. J. comp. Med.* **20**, 362-373. [French summary.] **703**

The authors discussed literature on leptospirosis in man and animals, with special reference to North America. In a serological survey on 1,001 cattle in 45 herds, the complement-

fixation test, using a commercial *L. pomona* antigen, revealed 6% of positive reactions.
—P. Boulanger.

Misao, T., Hiroyoshi, S., Katsuta, K., Nishihara, Y., Kobayashi, Y., Kuwashima, K. & Aso, M. (1956). **Canicola fever in Japan.** *Amer. J. Hyg.* **63,** 294-307. **704**

The occurrence in Japan is reported of 9 sporadic human cases of canicola fever and two epidemics of 43 and 114 cases. In the epidemics, infection was probably water-borne as all the patients had been rice planting or swimming. Recovery was rapid and there were no deaths. In the area of the sporadic cases, 30 out of 458 stray dogs were found to be leptospira carriers, whilst in the endemic areas, 15 out of 67 stray dogs were carriers. Positive serological reactions for *L. canicola* were detected in 81 and 41, respectively, of these dogs.
—A. Ackroyd.

Katić, R., Dimitrijević, V. & Mekuli, E. (1956). Rezultati ispitivanja imunogene vrednosti polivalentne vakcine protiv obolenja ovaca izazvanih mikroorganizmima iz grupe *W. perfringens.* **[Immunizing property of vaccines against ovine clostridial infections.]**—*Veterinaria, Sarajevo.* **5,** 36-40. [In Croat. English and French summaries.] **705**

A polyvalent formolized adsorbed vaccine against enterotoxaemia and lamb dysentery was prepared from indigenous strains of *Clostridium welchii* type B, C and D. S/c doses of 10 ml. were given to 1833 pregnant ewes about a month before lambing. All immunized ewes and their offspring remained healthy and vaccination was repeated after an interval of three months. In control flocks incidence of clostridial infections was stated to have been up to 20%.—E.G.

Bullen, J. J. & Batty, I. (1956). **The effect of *Clostridium welchii* type D culture filtrates on the permeability of the mouse intestine.**—*J. Path. Bact.* **71,** 311-323. **706**

In spite of the relationship of *Cl. welchii* Type D to enterotoxaemia in sheep, normal sheep tolerate fairly large amounts of the ϵ toxin in the small intestine without ill effect. The authors found that while large oral doses had no apparent effect on mice the same dose given serially in divided doses led to typical ϵ toxin poisoning and they inferred that the repeated dosage altered the permeability of the intestine. Except in very early life the wall of the intestine behaves as a semi-permeable membrane capable of preventing the absorption of large amounts of material of high molecular weight. Allergic sensitivity frequently found to various dietary antigenic proteins may result from this phenomenon. When antibody globulin is in sufficiently high concentration in the intestine small amounts can be found in the blood. This inability to exclude entirely material of high molecular weight enables the use of a sensitive test for change in the permeability, *e.g.* by the administration of antibody globulin and the demonstration of its presence in the blood stream after its passage from the intestine, the rate of absorption serving as an index. Using this test the authors studied circumstances which permit the absorption of the toxin from the intestine when given *per os.* Concentrated culture filtrate can cause a rapid increase in permeability. The greatest and most immediate effect was caused by the whole filtrate. When ϵ toxin was rendered inactive this ability to cause an increase in permeability was delayed. The increase was due to the ϵ toxin and not to any other known antigen of the organism. It was due to some other factor in the filtrate. The factor was absent from uninoculated broth and must have developed during the growth of the culture.
—W.A.P.

Guida, V. O. (1955). Método para estudo da sensibilidade dos anaeróbios aos antibióticos em cultura de superfície. **[A method for studying the effect of antibiotics on anaerobes in surface cultures.]**—*Arch. Inst. biol. (Def. agric. anim.), S. Paulo.* **22,** 39-42. [Abst. from English summary.] **707**

Blood agar plates are inoculated and filter paper discs impregnated with antibiotic are later placed over the agar surface. After incubation for 48 hours at 37°C. the diameter of the zones of inhibition is measured.—M.G.G.

Blom, E. (1956). Et 5 års kontrolforsøg over forekomsten af Vibrio fetus reagenter i det møn'ske kvaegavlsområde med anvendelse af en modificeret tampon-prøve teknik. **[Preliminary report on a five-year *V. fetus* control programme in breeding cattle in the Island of Møn, Denmark, using a modified tampon sampling technique for the agglutination test.]**—*Medlemsbl. danske Dyrlaegeforen.* **39,** 533-540. [In Danish.] **708**

The island of Møn, with an adult cattle population of about 13,000, was chosen for this voluntary survey and control programme as it is one of the most isolated breeding centres in Denmark and the cattle have been free from TB. and brucellosis for some years. The farms are small or medium sized except for 4 or 5 with 100–200 head; 80–85% are of the Red Danish Dairy breed (RDM), the rest Jersey and

Jersey crosses. About 98% of the RDM cattle are artificially inseminated from *V. fetus*-free bulls on the island, the remainder being served naturally by 12–15 privately owned bulls; Jersey semen comes from bulls on the mainland, 2 of which were found infected early in 1954. Tampon sampling apparatus which costs only a few pence is used and is destroyed after one use. A Swedish and a Danish antigen are used in the agglutination test: others are on trial. During the first 3 years of the programme, which envisages eradication, 24,905 vaginal mucus samples had been tested; 23·9% were from heifers. There were 188 (0·75%) positive reactions (representing 160 cattle in 95 herds) and 209 doubtful. The incidence of RDM reactors in the 3 years was 0·4%, 0·2%, and 1% (the increase in 1955–56 was due to late entry of a privately owned herd with 5 reactors); Jersey reactors were 7·5%, 5·8%, and 3·3%. The average age of reactors was 6–7 years. In only 4 herds (Jersey) were 4 or more reactors found and later infertility was reported from 3 of these herds; all the reactors were cows. Even in these 4 herds the infection was only of the chronic passive form. There would seem to be good prospects of eradicating the infection in a few years if the Jersey bulls supplying semen and the privately owned bulls on the island are submitted to compulsory regular examination.—F.E.W.

MUNDT, W. (1956). Die Züchtung von Vibrio foetus auf Nitrozellulose-Membranfiltern zwecks Gewinnung von Antigen. **[Cultivation of *Vibrio fetus*, for the preparation of antigens, on nitrocellulose membrane filters.]** —*Prakt. Tierarzt.* No. 8. 218 & 220-221. **709**

M. used a nitro-cellulose membrane filter with a pore diameter of 200 mμ for the preparation of *V. fetus* antigen. Two drops of culture, evenly spread over the filter surface and incubated for 3 days at 37°C. without CO_2 resulted in abundant growth; the antigen was obtained by removing the membrane and washing it with normal saline. This method obviated the need for repeated washing and purification of the organisms, necessary with liquid and solid culture media. Attention was drawn to the possible use of membrane filters for analytical studies on the metabolism of micro-organisms and cells, particularly of tumour cells.

—F. K. LEEB.

ROBERTS, D. S. (1956). **Vibrionic dysentery in swine. The isolation of a vibrio from an outbreak in New South Wales.**—*Aust. vet. J.* **32,** 27-30. **710**

During an outbreak of typical swine dysentry a vibrio was isolated and reproduced the disease when fed to pigs.—R. D. BARRY.

LEVENTHAL, A. A. & EASTERBROOKS, H. L. **Parenteral use of varizyme in the treatment of nonresponding foot rot in cattle. Eight case reports.**—*J. Amer. vet. med. Ass.* **129,** 422-425. **711**

Eight cases of foot rot in cattle, four of them severe, which failed to respond to antibiotics, were successfully treated with a proprietary enzyme preparation containing streptokinase, streptodornase and human plasminogen. Treatment usually consisted of 2 i/m doses, accompanied by 2·5 g. tetracycline i/v, with an interval of 2–6 days between injections. No evidence of allergy was seen.—M.G.G.

HARASZTI, J. & PAÁL, S. (1956). **Etiology and therapy of infectious granular vaginitis in cattle.**—*Acta vet., hung.* **6,** 343-354. [In English. Russian summary.] **712**

Investigation of cattle with granular vaginitis on farms in Hungary revealed dietary deficiencies of phosphorus and carotene in every case; the disease was as widespread in young heifers as in cows. Ten healthy cows kept for 3 months on complete diet were then infected experimentally; they recovered in a fortnight without treatment. Two different age groups, each of 16 infected heifers from a naturally-infected herd, were fed a balanced diet containing adequate starch and protein, calcium and phosphorus in 1:1 ratio, and carotene, supplemented with added vitamins B (in yeast) and E and C (in barley). After 2 months nearly all were healed and at the end of the third month conception rates were normal. In a group of 28 infected controls fed silage, the disease had become chronic in the same period. The authors believe that a deficiency of carotene or phosphorus, or an unfavourable calcium/phosphorus ratio diminishes resistance to invasion by streptococci, staphylococci and coli bacteria. The milder form of the disease subsides on correction of the feed; the graver form requires in addition douching with a mild disinfectant.

—E.V.L.

ELLIOT, D. M., MAPLESDEN, D. C. & COTE, J. F. (1956). **Chloramphenicol intramuscular in bovine practice.**—*Canad. J. comp. Med.* **20,** 305-310. [French summary.] **713**

The authors tabulated and discussed briefly the results in 40 cases treated with chloramphenicol. Where possible, swabs were submitted for bacteriological examination. The principal

diagnoses were "shipping fever" (*Pasteurella* pneumonia), white scours, and pneumonia. They suggest that this agent should be of value in treating infectious diseases of cattle, especially cases of white scour where strains of *Bact. coli* have become resistant to most other commonly-used antibiotics.—D. MITCHELL.

BALDUCCI, M. & BRACALENTI, S. (1956). Organizzazione di un piano di accertamenti diagnostici per la profilassi della tubercolosi e della brucellosi bovina. **[Scheme for the diagnosis and control of TB. and brucellosis in cattle.]**—*Vet. ital.* **7,** 903-919. **714**

The authors describe the methods used and the results obtained in a campaign against TB. and brucellosis, carried out in 1955. It was based on the registration of all the cattle in the province (all marked by tattooing on the ear) and a separate register of all infected herds. Essentials for success, apart from the necessary financial backing, were widespread use of propaganda, and rapid and accurate diagnosis. The statistics obtained will be used to determine the future plans for the eventual control or eradication of each disease.—I. W. JENNINGS.

EIDE, G. W. (1956). **Studies on infertility and abortion in sheep and goats in Norway. I. The occurrence of *Listeria monocytogenes* and *Vibrio fetus* in the sexual organs of normally fertile ewes.** — *Nord. VetMed.* **8,** 437-445. [In English. German and Norwegian summaries.] **715**

Bacteriological examination of uterine tissue from 69 sheep and a goat after slaughter failed to reveal either *Erysipelothrix monocytogenes* or *V. fetus*.—T.E.G.R.

DORĐEVIĆ, Ž. (1956). **[Cultivation of *Cryptococcus farciminosus*.]**—*Vet. Glasn.* **10,** 279-282. [In Serbian. French summary.] **716**

The author reported on cultivation of *Histoplasma farciminosum* on an agar-serum medium, on a potato medium and on a 2% peptone water-glucose medium. Before sowing the media were treated with 50 i.u./ml. of crystallized penicillin. It was important to maintain a pH of 7·2–7·4.—E.G.

SÉGRETAIN, G., VERGE, J., DRIEUX, H., MARIAT, F., PARAF, A., LABIE, C. & THÉRON, B. (1956). Mammite à *"Cryptococcus neoformans"*. **[Bovine mastitis caused by *Cryptococcus neoformans*.]**—*Bull. Acad. vét. Fr.* **29,** 33-41. **717**

The yeast was isolated in almost pure culture from the milk of a cow with chronic mastitis. The laboratory identification of the organism is described. Treatment with actidione was attempted.—M. B. HAWKSLEY.

TAKOS, M. J. (1956). **Experimental cryptococcosis produced by the ingestion of virulent organisms.**—*New Engl. J. Med.* **254,** 598-601. **718**

Infection with *Cryptococcus neoformans* is rarely reported in domestic animals, but probably occurs more frequently in endemic areas than is realised. T. gave culture *per os* to 3 marmosets (*Leontocebus geoffroyi*), the dosage being 54, 108 and 150 million organisms respectively. The one given the low dose died 4 days later; the one given the medium dose survived for 19 days and the one given the high dose for 32 days. A control on the same regimen, but undosed, remained healthy. All were dull and refused food the day after the dosage; the two on the larger doses recovered in a week and became active and fed well until the final illness (of which details are not given). *Post mortem* a lesion containing the organism was found in a mesenteric lymph node of the one given the medium dose; in the one given the larger dose there were lesions in the brain, heart, and a mesenteric lymph node. Cultures from the lesions were pathogenic for white rats. T. commented on the passage of the organisms through the stomach of the marmosets and their capacity to invade the tissues.—W.A.P.

HALLGREN, W., HOFLUND, S. & NORDSTRÖM, G. (1956). Om ringworm och dess behandling. **[Ringworm and its treatment.]**—*Medlemsbl. Sver. VetFörb.* **8,** 337-340 & 342. [In Swedish.] **719**

In field trials in 9 infected herds of cattle, ringworm was treated with satisfactory results in all except obstinate long-standing cases, with a 1–2% soln. of 2-2' -dihydroxy-5, 5' -dichlordiphenyl methane and 2, 2' -dihydroxy-5, 5' -dichlordiphenyl sulphide 0·5% in isopropyl alcohol. It was applied locally with a small brush on two successive days, treatment being repeated after 8 days. After toxicity tests on rabbits, a slaughter cow was painted over the entire trunk with one third of a litre of the 2% soln.; there were no side-effects and after slaughter 48 hours later the meat had no abnormal smell, taste or other changes and was passed at meat inspection.—F.E.W.

LUKASHENKO, F. D. (1955). **[Results of a two-year control programme against caprine contagious pleuropneumonia in Uzbekistan.]** — *Trud. XL Plenum vet. Sect., Akad.*

sel'skokhoz. Nauk imeni Lenina. Stavropol, 1953. pp. 149-153. [In Russian.] **720**

Up to 1950 general prophylactic and quarantine measures had failed to control caprine contagious pleuropneumonia in the Uzbek S.S.R. During the period 1950/52 3,700 litres of an aluminium hydroxide formol vaccine were prepared and inoculated s/c into healthy adult goats as two 5 ml. doses separated by a week's interval. Young goats were given 3 ml. doses. Before vaccination all goats were examined, and those with symptoms of the disease were isolated for treatment or slaughter. In 1950, 33,000 goats on 41 farms were vaccinated; on these farms 66 infected animals were detected before vaccination and none since. These results led to the extension of vaccination, and 1,816,400 goats had been vaccinated by the middle of 1953. Three examples are given of the virtual eradication of the disease from different regions. In the Namangan region the incidence was reduced from 141 outbreaks in 1950 to only 4 cases in the first half of 1953.—R.M.

COTTEW, G. S. (1956). **A chronic respiratory disease of poultry in Queensland.**—*Aust. vet. J.* **32,** 249-251. [Author's summary modified.] **721**

A chronic respiratory disease of fowls characterized by coughing, gasping, tracheal râles, mucoid nasal discharge and loss of weight occurs in Queensland. These signs may persist in individual fowls for months. Although the morbidity is high, mortality is low. P.M. lesions may include mucoid tracheitis, inflammation of the air sacs, pneumonia, or sinusitis. Pleuropneumonia-like organisms can often be isolated from tracheal exudate, sinuses, conjunctival and air sacs in the apparent absence of other micro-organisms, but no proof has been obtained that they are responsible for the disease.

SMITH, P. F. (1956). **Quantitative measurement of the growth of pleuropneumonia-like organisms.**—*Appl. Microbiol.* **4,** 254-259. [Author's summary modified.] **722**

Three measurements which accurately determined the extent of growth of pleuropneumonia-like organisms in cultures were the turbidity of concentrated cultures, colony diameter, and the number of colonies on a plate. Measurement of acid production, the turbidity of unconcentrated cultures and zone growth by the cup plate method were of no value for assessment of growth.

KVESITADZE, I. F. & MIKHAILOVA, I. F. (1955). **[Infectious agalactia of sheep and its control.]** — *Trud. XL Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina.* Stavropol. 1953. pp. 138-149. [In Russian.] **723**

In Georgia three clinical forms of contagious agalactia occurred between March and September, affecting mainly the udder, joints and eyes, respectively. A respiratory form was not observed. Although affected sheep were generally slaughtered for food, valuable animals were treated with hyperimmune serum, prepared in cows. Preliminary experiments with formolized aluminium hydroxide and saponin vaccines, prepared from cultures of "small coccal" forms of the causal organism, were reported. One such vaccine was injected s/c in 2 ml. doses into 1,246 ewes during April. There were 19 cases of agalactia in this group, compared with 198 cases in 1,254 unvaccinated controls on the same farm. The authors concluded that 3 of their strains possessed immunogenic properties, and that further work on the preparation of vaccines was necessary.—R.M.

CUMMINS, C. S. (1956). **The chemical composition of the bacterial cell wall.** In International Review of Cytology. Vol. V. pp. 25-50. [London: Academic books Ltd.] [Author's conclusion modified.] **724**

Two interesting questions are the purely chemical problem of structure and, if major cell antigens are situated in the cell wall, as seems to be the case, the related immunochemical problem of correlating chemical constitution and antigenic specificity. Furthermore, the enzyme-substrate systems afforded by the action of lysozyme and similar enzymes on cell walls could contribute to knowledge of cell wall composition and of enzyme specificity. The cell walls of Gram-positive species in particular seem well adapted to studies of this kind since they contain a relatively small number of basic units. The wall of *Streptococcus pyogenes,* for example. consists almost entirely of rhamnose, two hexosamines, and three amino-acids. There is also the possibility of comparing the cell wall composition not only of different bacterial genera, but of bacteria and other micro-organisms such as yeasts, algae, fungi, and protozoa.

ENDREJAT, E. & STADELMANN, L. (1956). Der Keimgehalt verschiedener Gammahexanbademittel während der Schafbadung. **[The bacterial content of various B.H.C. dips after dipping.]**—*Tierärztl. Umsch.* **11,** 408-410. **725**

B.H.C. dips had a high bacterial content after the dipping of several hundred sheep.

Manufacturers are recommended to produce dip preparations containing powerful disinfectants.
—M.G.G.

HAMLIN, L. J. & HUNGATE, R. E. (1956). **Culture and physiology of a starch-digesting bacterium** (*Bacteroides amylophilus n. sp.*) **from the bovine rumen.**—*J. Bact.* **72,** 548-554. [Authors' summary modified.] **726**

The organism was Gram negative, non-motile, and was found sporadically in the bovine rumen, occasionally in large numbers. Four strains were isolated from rumen samples from a steer with a rumen fistula, an unfistulated steer and a dairy cow in lactation. The organism was not always present in these animals and was not found in 3 other cattle which were examined, though no extensive search was made. The occurrence of pleomorphism varied in the different strains. In large organisms, intracellular granules could be detected. *B. amylophilus* was quite specific for starch, fermenting only starch and maltose out of a large number of hexoses and disaccharides tested. It grew well on peptone-yeast extract medium in the presence of fermentable carbohydrate. The main fermentation products identified were acetic, formic, and succinic acids. A measurable quantity of carbon dioxide was fixed in one experiment. Traces of ethanol and lactic acid may be formed. The viability of cultures was poor.

BRYANT, M. P. (1956). **The characteristics of strains of *Selenomonas* isolated from bovine rumen contents.** — *J. Bact.* **72,** 162-167. [Author's summary modified.] **727**

Of 10 strains of *Selenomonas ruminantium* and one of a morphologically similar organism, 8 were isolated from the rumen of cattle. The organisms were anaerobic, large, curved, usually crescent-shaped rods with tufts of flagella attached to the middle of the concave side. They produced H_2S from cysteine, and a pH of 4·3 to 4·4 in a glucose medium. NO_3 reduction and the Vosges-Proskauer reaction varied. All strains produced acid from glucose, xylose, arabinose, galactose, fructose, lactose, maltose, cellobiose, esculin and salicin; most produced acid from sucrose and mannitol; and some from trehalose, glycerol, dextrin and inulin. Acid production during growth on fluid-glucose medium varied. Three strains produced CO_2 and no combustible gas. Ability to hydrolyse starch and ferment lactate varied. Lactate-fermenting strains produced propionic and acetic acids. One strain was morphologically similar to but differed from *Selenomonas* in cultural and physiological characteristics.

See also absts. **883** (bacteriological survey of mink with urolithiasis); **961** (apparatus for aeration of bacterial cultures); **965** (report, Mukteswar); **966** (book, sex in microorganisms).

DISEASES CAUSED BY PROTOZOAN PARASITES

KRUPP, I. M. (1956). **Amebic invasion of the liver of guinea pigs infected with the larvae of a nematode,** *Toxocara canis.*—*Exp. Parasit.* **5,** 421-426. [Author's summary modified.] **728**

Fifty-four g. pigs infected 1–4 weeks previously with 25 *Toxocara canis* larvae per g. body wt. and 29 uninfected controls were inoculated intracaecally with *Entamoeba histolytica.* Although larvae in the tissues had no evident effect on amoebic invasion of the caecum, they may have contributed to the persistence or distribution of amoebae in the liver. Amoebae were recovered in 40% of 240 cultures of liver tissue from 11 of 12 animals infested with *Toxocara* as compared with only 28% of 120 cultures from 3 of 6 controls which were not infested. There was no gross evidence of amoebic colonization in the liver and microscopic examination failed to reveal whether amoebae in the liver were associated with tissue changes produced by *T. canis* larvae.

MACCAFERRI, V. (1956). Il comportamento di forme vitali di "*Trichomonas vitulae*-Mazzanti 1900" nel canale gastroenterico e nelle feci di mosca. [**Behaviour of *Tr. foetus* in the gastro-intestinal tract and faeces of the fly.**]—*Zooprofilassi.* **11,** 439-440. **729**

For study of the growth of *Tr. foetus* in the fly, cultures were made in sterilized skim milk with 10% sterile horse serum added. Viable trichomonads could be obtained from the head of the fly 2–4 hours after feeding the culture, and from the gastro-intestinal tube up to 25 hours after. It was possible to find trichomonads in the rectum but, although they could be found apparently alive in the faeces, attempts to cultivate them from that material were unsuccessful.
—I. W. JENNINGS.

LUCAS, A., TOUCAS, L., LAROCHE, M. & MONIN, L. (1956). Trichomonose intestinale du faisandeau. [**Intestinal trichomoniasis in young pheasants.**]—*Rec. Méd. vét.* **132,** 613-617. **730**

The authors record an acute fatal trichomonad disease of fortnight-old pheasants. There was a catarrhal enteritis, the bowel contents being liquid and clear and containing an abun-

dance of trichomonads. Treatment with sodium-bis-*p*-arsonophenylamino-1,2 ethane was successful. The authors considered the trichomonad to be a new species and proposed to name it *Tr. phasiani*.—E. J. L. SOULSBY.

CUCKLER, A. C., MALANGA, C. M. & OTT, W. H. (1956). **The antiparasitic activity of nicarbazin.**—*Poult. Sci.* **35,** 98-109. **731**

"Nicarbazin" (a complex of a carbanilide and a dimethyl pyrimidine) was investigated from the toxicological and antiparasitic standpoint. Toxicity was not noted though weight gain was depressed by high doses. Anticoccidial activity was marked at continual low dosage levels (0·012% of feed) and the development of immunity to coccidia was not interfered with.
—E. J. L. SOULSBY.

SHERWOOD, D. H., MILBY, T. T. & HIGGINS, W. A. (1956). **The effect of nicarbazin on reproduction in White Rock breeder hens.**—*Poult. Sci.* **35,** 1014-1019. **732**

Nicarbazin at a level of 0·0006% in the food of laying hens had a slight adverse effect on egg hatchability and at 0·005% decreased hatchability by 50%. At 0·0125% egg production was slightly depressed, and ceased at 0·07%. It appeared to have no effect on subsequent fertility when fed to chicks and pullets.—M.G.G.

WHITTLE, P. (1956). **The estimation of age-specific infection rates from a curve of relative infection.**—*Biometrics.* **12,** 154-162. **733**

A procedure is described for deriving formulae for the estimation of the rate of a permanent infection in a population as a function of age and of the expectation of life after infection. The method was applied to unpublished data on the incidence of liver lesions due to coccidiosis in New Zealand wild rabbits. Graphical interpolation by weeks of the age grouped data yielded the curve of relative infection.—A. ACKROYD.

PELLÉRDY, L. (1956). **On the status of the *Eimeria* species of *Lepus europaeus* and related species.** — *Acta vet., hung.* **6,** 451-467. [In English. Russian summary.] **734**

The coccidia of the hare (*L. europaeus*) and rabbit (*Oryctolagus cuniculus*) were found to be host specific. P. described the species of *Eimeria* found in both hosts and recorded two new species, *E. hungarica* and *E. europaea* from the hare. He did not find *E. stiedae* in the hare.
—JAS. G. O'SULLIVAN.

KAPUSTIN, V. F. (1955). **[Atlas of ixodid ticks and parasites of the blood of animals.]** pp. 216. Moscow: Gosud. izd. sel'skokhoz. lit. 2nd revised edit. 13r. **735**

This book is designed to illustrate the morphology of protozoa occurring in the blood of farm animals and birds, and the ticks which transmit them. The following protozoa are described, together with their geographical distribution in the U.S.S.R.:—*Trypanosoma ninae kohl-jakimovi*, Jakimoff 1918 (the cause of surra in South-Eastern regions); *T. equiperdum* ("extremely rare"); *T. brucei* (does not occur in the U.S.S.R.), *T. theileri* and *T. lewisi; Piroplasma caballi*, Nuttall & Strickland 1910 (the South of European Russia, Siberia and the Far Eastern region); *Piroplasma bigeminum* (South and South-East regions); *P. ovis*, Lestoquard 1925; *P. trautmanni, P. canis* and *P. kolzovi; Babesiella bovis*, Babes 1888 (North-West and Central zones); *Françaiella colchica*, Jakimoff 1927 (South and South-East) and *F. caucasica*, Jakimoff & Belawine 1926 (both species in cattle); *Nuttallia equi* (Southern and Central zones).

Only 3 species of *Theileria* are given: *Th. annulata* (Southern and South-Eastern regions); *Th. sergenti* (South-East) and *Th. tarandi-rangiferans* (reindeer in the tundra zone). Also illustrated are *Anaplasma* spp., *Plasmodium* spp., and *Toxoplasma*.

The morphology of 26 ticks of the genera *Ixodes, Boophilus, Rhipicephalus, Dermacentor, Hyalomma, Argas, Ornithodoros* and *Melophagus* is richly illustrated. In most cases there is also a chart depicting the host range. There are two appendices, one of which is a list of protozoa with the animals or birds they infect and the ticks which transmit them. The other is a brief account of "clavate forms of haemosporidia", which are regarded as intermediate forms of blood protozoa occurring in ticks.

The 255 illustrations are nearly all original photomicrographs of fine quality, printed on good paper. Most of the protozoa are represented as seen at ×1,000 magnification and the ticks are at ×10 to ×50 magnification.—R.M.

CHULKOVA, I. P. (1956). **[Piroplasmosis of dogs in the Tatar A.S.S.R. and its treatment with novoplasmin.]** — *Uchen. Zap. Kazan. vet. Inst.* **62,** 101-114. [Abst. from abst. in *Referat. Zh., Ser. Biol.* No. 20, p. 484 (1956).] **736**

Good results were claimed for the parenteral administration of 2–3 doses of 1–2 ml. 0·1% aqueous soln. novoplasmin [N,N'-di(4 dipropylaminophenyl) urea methyl methosulphate].
—R.M.

FARBER, J. (1955). **Anaplasmosis—an experiment to combat the disease by use of terramycin, glucose, vitamin C and acetylmethionine.** — *Refuah vet.* **12,** 398. In Hebrew. [In English p. 465.] **737**

Terramycin, in an i/v dose of 2·5 g., was given to 10 cattle with anaplasmosis as soon as their temperatures began to rise. All made a complete recovery. This treatment was unsuccessful in an 11th animal having a normal temp., anaemia, and complete atony of the rumen. In cases where terramycin is too expensive, an i/v injection of 500 ml. of 50% glucose, 1,500 mg. ascorbic acid and 25 g. of acetylmethionine is recommended.—M.G.G.

See also absts. **806** (T. melophagium causing death of Melophagus ovinus); **965** (report, Mukteswar Institute); **966** (book, sex in microorganisms).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

BLANC, R. A. (1956). Estudio comparativo entre algunos componentes de la reacción de fijación del complemento. **[Some components of the complement-fixation reaction.]**—*Gac. vet., B. Aires.* **18,** 126-137. **738**

The object of these studies was to find the best method for routine preservation of components for use in the c.f. test for F. & M. disease. Comparative titration of complement of first and second extraction preserved by freezing after dilution 1 : 10 in a phosphate soln., and complement preserved in a soln. of boric acid (2 g.) and potassium sulphate (5 g.) in 50 ml. distilled water (to 50% dilution, as described by Witte) showed that with the first two methods there was loss of titre with time, even when thawing was done every 7 days. With the last-named method the titre remained constant for at least 56 days, after an initial slight loss; this method is also the most economical. Provided that the titre of the complement used was constant, haemolytic serum of either first or second extraction, preserved by freezing, retained a constant titre for at least 60 days, after an initial slight loss; freezing is considered the best method. Haemolytic serum preserved at 5°C. in a phenolized saline soln. retained a constant, but lower, titre for 60 days; here, too, the use of complement with a constant titre was essential.—F.E.W.

FERRANDO, R., DHENNIN, LÉONE; DHENNIN, LOUIS; JACQUES, F., FROGET, J. & CAUCHARD, J. -C. (1956). Vitamine A sérique et vaccination anti-aphteuse. **[Vitamin A in the serum during vaccination against foot and mouth disease.]** — *C. R. Acad. Sci., Paris.* **242,** 3143-3145. **739**

Six young cattle were given 150,000 i.u. of vitamin A and then 3 of them were inoculated with F. & M. disease vaccine. 10–13 days after vaccination there was no trace of vitamin A in the serum, although in the 3 other cattle, which were given the vitamin but not the vaccine, there was the same amount of vitamin A in the serum at 10–13 days as just after administration of the vitamin. From this very small experiment it was suggested that the vitamin takes part in antibody formation.—R.M.

BANDIRALI, M. & ALBANESI, A. (1956). La malattia di Aujeszky o pseudorabbia in un allevamento di suini della Pianura Padana. **[Aujeszky's disease in pigs in the Po Valley.]** —*Clin. vet., Milano.* **79,** 247-251. **740**

Aujeszky's disease was diagnosed in a herd of about 800 pigs of various ages. Unweaned piglets were the worst affected, with a mortality rate of 80–90%. Pigs weighing 35–40 kg. were less badly affected, with a mortality rate of 5–10%. The disease in adult pigs appeared to be subclinical in type, and it was found that vaccination of pregnant sows enabled them to pass on sufficient immunity to their new-born piglets to protect them over the dangerous period.—I. W. JENNINGS.

ŠRAJBER, L. & KURJAKOV, B. (1956). Podaci o raširenosti morbus Aujeszky na teritoriji A. P. Vojvodine. **[Incidence of Aujeszky's disease in the Vojvodina Province.]** — *Vet. Glasn.* **10,** 496-500. [In Croat.] **741**

Death from Aujeszky's disease was diagnosed during 1950–52 in 5 dogs, a pig and an ox. During 1953–55 there were 21 deaths in dogs, 8 in pigs and 3 in cattle. During the latter period the disease was also diagnosed in 2 cats, a sheep and a roe deer.—E.G.

JIVOIN, P. (1956). Contribuţii la studiul epizootologic al bolii lui Aujeszky la porcine. **[Epidemiology of Aujeszky's disease in pigs. A study of eight outbreaks.]**—*Probl. Epiz. Microbiol., Inst. Pat. Igien. Anim., Bucureşti.* No. 5. 35-50. [In Roumanian. Abst. from French summary.] **742**

An epidemiological study of 8 outbreaks revealed that the pig is the main reservoir of the virus and may remain a carrier for a long time. The disease makes its appearance among the young born to sows from premises which,

up to 5–12 months previously, had been infected. On its first appearance in a herd the disease may have an incidence of 29·34–66·86% with a case mortality of 66·84–72·85%. In herds where no control measures are taken the disease becomes endemic and gradually subsides until in subsequent years it occurs only sporadically.
—T.E.G.R.

BERBINSCHI, C. (1956). Cercetări asupra prezenţei anticorpilor neutralizanţi în sîngele porcilor, în focare de boala lui Aujeszky cu diferite situaţii epizootologice. **[Presence of neutralizing antibodies in the blood of pigs during outbreaks of Aujeszky's disease.]** — *Probl. Epiz. Microbiol., Inst. Pat. Igien. Anim., Bucureşti.* No. 5. pp. 19-28. [In Roumanian. Abst. from French summary.] **743**

The neutralization test was used in a study of the course of the disease, and sera from 4 infected and 2 clean herds were examined. In outbreaks of 5–8 days' standing, neutralizing antibodies were demonstrable in one third of the serum samples, while at 36 days they were present in high titres in all the samples. Antibodies were not demonstrable in the sera from the clean herds except in one which is considered to have been from a recovered animal. It is suggested that the test can be of value in epidemiological research.

REMLINGER, P. (1956). Les vaccins pasteuriens et le vaccin Flury dans la vaccination des animaux. **[The Pasteur and Flury rabies vaccines for immunization of domestic animals.]**—*Bull. Off. int. Epiz.* **45,** 592-600. **744**

After discussing the merits of these vaccines R. considers that the Flury virus vaccine is hazardous and has not shown itself to be superior to the Pasteur vaccine.—M.G.G.

BOYSE, E. A., KLEMPERER, M., MORGAN, R. S. & PAYLING WRIGHT, G. (1956). **Pressure fluctuations in the cerebrospinal axis of rabbits as a possible physiological mechanism for virus dispersal in the central nervous system.** — *Brit. J. exp. Path.* **37,** 461-465. [Abst. from survey of paper, p. i.] **745**

The authors recorded the pressure changes at different levels in the vertebral canal and in the posterior cranial fossa of rabbits. The "arterial" pulsations were not synchronous throughout the cerebro-spinal axis, those in the thoracic region occurring earlier than those in the posterior cranial fossa and the lumbar region. It is suggested that these asynchronous pressure fluctuations may be a factor in the dispersal of particles through the extracellular compartment of the c.n.s.

TEN, M. P. (1955). **[Eradication of sheep pox by preventive vaccination.]**—*Trud. XL Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina.* Stavropol, 1953. pp. 64-68. [In Russian.] **746**

Disadvantages of aluminium hydroxide sheep pox vaccine were the relatively short period of immunity (4–5 months); the short time for which the vaccine remained potent (6 months); blockage of needles and syringes with aluminium hydroxide, particularly during cold weather; occasional necrosis and abscess formation at the site of inj.; relatively large dose (5 ml.), large amounts being bulky for transport under Central Asian conditions. T. favoured ovination, performed during September and October.—R.M.

VANNOVSKI, T. Y. (1955). **[Studies on goat pox under Central Asian conditions and its control.]** — *Trud. XL Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina.* Stavropol, 1953. pp. 57-63. [In Russian.] **747**

In Tajikistan and the neighbouring Central Asian republics goat pox was an acute generalized infection, affecting particularly imported breeding stock of the Angora and Pridon breeds. 18·9% of infected goats died, and 80% of farms were infected. Vaccination with goat pox virus was practised on infected farms, and an aluminium hydroxide goat pox vaccine was used to protect animals on uninfected farms. Immune serum was stated to give encouraging results when used prophylactically and therapeutically.
—R.M.

POWELL, A. K. & PEARSON, A. E. G. (1956). **Attempted control of ectromelia in mice.**— *Brit. Emp. Cancer Campaign 33rd Ann. Rep.*, 1955. pp. 123-124. **748**

An attempt, which promised to be successful, was made to control an outbreak of mouse pox in a mouse colony. The tail was scarified near its root with glycerinated calf lymph containing active vaccinia virus, diluted fivefold with McIlwaine's citric acid-phosphate buffer at pH 7·2. At first, all the mice in the colony were vaccinated, and subsequently, all mice born were vaccinated and classified as positive or negative reactors before separation from their dams. Negative mice were culled, and breeding was from lineages of parents with positive records. This vaccination was combined with strict hygienic measures.—E. COTCHIN.

NAKAMURA, J., MIYAMOTO, T. & NAGASHIMA, H. (1956). **[Studies on the keeping quality of fowl pox vaccine prepared with EIE vehicle.]**—*N. I. B. S. Bull. biol. Res., Tokyo.* **1,** In English: pp. 87-94. In Japanese: pp. 175-182. **749**

"EIE" vehicle was prepared from emulsified fresh whole (uninfected) eggs and embryonated eggs infected with embryo-adapted pigeon pox virus 4–6 days previously, to which 30% glycerol and 0·5% phenol was added. The proportion of uninfected to infected eggs varied from 1:3 to 2:1, apparently without influencing the results. Vaccine prepared with this vehicle remained potent longer than vaccine prepared with a 30% aqueous soln. of glycerol.—R.M.

GIANTURCO, R. (1956). Una enzoozia difterovaiolo aviare da malattia respiratoria cronica Risultati di terapia sperimentale. **[Treatment of fowl pox complicated by chronic respiratory disease.]** — *Zooprofilassi.* **11,** 503-506. [English and French summaries.] **750**

In an outbreak of fowl pox affecting a flock of 3,000 birds, about 1,000 of which had not been vaccinated against the disease, the mortality reached 8–10%. In treatment the best results were stated to be given by intramuscular injection of 1:10,000 adrenaline and addition of potassium iodide in a conc. of 0·07% to the drinking water.—I. W. JENNINGS.

MILES, J. A. R. & DANE, D. M. S. (1956). **Further observations relating to Murray Valley encephalitis in the northern territory of Australia.**—*Med. J. Aust.* March 10th. 389-393. **751**

Serological investigation of aborigines on three Northern Territory cattle stations confirmed earlier findings of a high incidence of antibody to Murray Valley encephalitis. Antibodies were also present in domestic birds and a wide variety of wild birds. It seems that Murray Valley encephalitis is endemic in the Northern Territory.—R. D. BARRY.

SMITH, C. E. G. (1956). **A virus resembling Russian spring-summer encephalitis virus from an ixodid tick in Malaya.**—*Nature, Lond.* **178,** 581-582. **752**

A virus serologically similar to that of Russian spring-summer encephalitis was isolated from pooled *Ixodes granulatus* Supino ticks from forest rats near Kuala Lumpur. From this it would appear that the disease is more widespread than hitherto suspected; *I. granulatus,* though not recorded as biting man in Malaya, has a wide host-range and the possibility of its transmitting the disease to man should not be overlooked. The virus was antigenically related to Japanese encephalitis and to dengue viruses. —T.E.G.R.

ŻULIŃSKI, T. (1956). Diagnoza histopatologiczna niedokrwistości zakaźnej koni (n.z.k.) **[Histopathological diagnosis of equine infectious anaemia.]**—*Roczn. Nauk rol. Ser. E.* **67,** 375-386. [In Polish. English and Russian summaries.] **753**

The author examined livers and spleens from 1,494 horses and, on the basis of histological findings, classified 656 positive results under 3 groups: (1) 382 cases of acute equine infectious anaemia (2) and (3) chronic cases, of which 207 were from fevered horses and 67 from animals with normal temperature. Lesions identical with those of E.I.A. were also found in the livers of 2 pigs, which had been in contact with diseased horses, but showed no clinical symptoms.—M. GITTER.

ŻEBROWSKI, L. & ŻULIŃSKI, T. (1956). Ocena wartości metody "zimnej" hemaglutynacji i innych metod przyżyciowego rozpoznawania niedokrwistości zakaźnej koni w oparciu o pośmiertne badania histopatologiczne. **[Value of cold haemagglutins in the diagnosis of equine infectious anaemia.]** — *Roczn. Nauk rol.* Ser. E. **67,** 387-396. [In Polish. English and Russian summaries.] **754**

The authors investigated several methods of diagnosis of equine infectious anaemia, and positive histo-pathological findings were used as a basis for comparison of results obtained by different methods. Measurements of body temperature and cold haemagglutination gave constantly better results than the r.b.c. and w.b.c. counts, colour index and erythrocyte sedimentation tests. [See also *V.B.* **26,** 92.] —M. GITTER.

HRNJAK, D. & TOMAŠ, B. (1956). Zarazna upala pluća konja kao komplikacija zaraznog kašlja. **[Infectious bronchopneumonia as a complication of epidemic cough in horses.]**—*Vet. Glasn.* **10,** 262-267. [In Croat.] **755**

Case histories in four horses in an army remount depot were given in some detail and discussed.—E.G.

HELLER, L., ESPMARK, Å. & VIRIDÉN, P. (1956). **Immunological relationship between infectious cough in horses and human influenza A.**—*Arch. ges. Virusforsch.* **7,** 120-124. [In English.] **756**

Complement-fixation titres of sera from 21 horses either ill, convalescent or recently

recovered from infectious cough, against influenza A soluble antigen (A-Sweden-3/50 strain), ranged from 1:8 to 1:64. The convalescent phase sera of a further 5 horses were titrated in addition against PR-8 soluble antigen, with closely parallel results. The haemagglutination-inhibition test failed to demonstrate strain-specific antibodies against different strains of influenza A virus.—E.V.L.

MARES, R. G. (1956). **Skin lesions in rinderpest.** —*Bull. Epiz. Dis. Afr.* **4,** 82. [In French p. 152.] **757**

The condition was observed in Somaliland, the lesions being small nodules more like those seen in demodectic mange than those in sporotrichosis.—T.E.G.R.

MADHUSUDAN, P. (1956). **Observations on the behaviour of goat adapted rinderpest virus in goats in Hyderabad State.**—*Indian vet. J.* **33,** 96-110. **758**

In local goats observed for 4 days after inoculation, in batches of 3 to 4 in each serial passage, with 3 different strains of the goat-adapted rinderpest virus, the mean peak temperature was occasionally very low.

—R. N. MOHAN.

PANDE, P. G. & KRISHNAMURTY, D. (1956). **Parotido-stomatitis in calves.**—*J. infect. Dis.* **98,** 142-149. **759**

Two outbreaks at a farm in India were investigated. Within the age limits of three months and two years, 32 out of 100 calves were affected in the first outbreak, 22 out of 81 in the second. Examination revealed an ulcerative stomatitis with lesions on the lips, gums and dental pad, but not the tongue. "Swelling at the region of the parotid gland" was seen only in the first case. Systemic disturbance was slight or absent. Calves inoculated into the buccal mucosa, or a parotid salivary gland or intravenously with various bacteria-free preparations of parotid salivary gland or buccal mucosa, developed buccal ulcers in varying degree, although the tongue was never affected. Recovered calves could not be re-infected. There was no cross immunity with F. & M. disease. The disease could not be reproduced experimentally in adult cattle, buffalo calves or yearling sheep and goats. G. pigs inoculated into the foot pad or parotid gland failed to react. [The fact that the disease could be reproduced with inocula prepared from parotid salivary gland, of affected calves, or by inoculation into one of the glands, is not sufficient reason for naming the disease parotido-stomatitis. The glandular swelling seen in the first case was caused by an abscess of bacterial origin.]

—L. M. MARKSON.

ANON. (1956). Sur la "blue tongue" (Fièvre catarrhale du mouton). **[Bluetongue in Portugal and Spain.]**—*Bull. Off. int. Epiz.* **45,** 591. **760**

Some outbreaks of bluetongue in Portugal and one in Spain are reported. The latter outbreak occurred near the Portuguese frontier, affecting 250 sheep in 15 flocks.—M.G.G.

MIMS, C. A. & MASON, P. J. (1956). **Rift valley fever virus in mice. V. The properties of a haemagglutinin present in infective serum.** —*Brit. J. exp. Path.* **37,** 423-433. [Abst. from Survey of paper, p. i.] **761**

It was found that a haemagglutinin could be obtained by acetone-ether extraction of infective serum. An inhibitor also present in the serum was unstable in the cold, and stored but otherwise untreated serum would therefore also give haemagglutination. Haemagglutinins obtained in these two ways differed in the species range of cells agglutinated, pH limits of activity and infectivity. Haemagglutination by Rift Valley fever virus was not inhibited by yellow fever or Semliki Forest virus antisera.

SAWA, I. (1956). Inhibition de multiplication du virus de la fièvre de la Vallée du Rift par le virus homologue irradié par des rayons ultraviolets. II. **[Inhibition of multiplication of the Rift Valley fever virus by ultraviolet-irradiated virus.]**—*C. R. Soc. Biol., Paris.* **150,** 835-837. **762**

The simultaneous injection of irradiated virus completely inhibited multiplication of the Rift Valley fever virus in mice but did not produce neutralizing antibodies. Neutralizing antibodies were found in mice treated with hyperimmune serum 3 hours after experimental infection but there was no marked inhibition of multiplication and it is, therefore, considered that neutralizing antibodies do not take part in the inhibition of multiplication.—T.E.G.R.

STAMP, J. (1956). **The enigma of scrapie disease in sheep.**—*Agric. Rev., Lond.* **2,** 18-23. **763**

A review of the little that is known about this disease, under the section headings:—history, incidence, age of sheep affected, symptoms, cause, diagnosis, and control.—M.G.G.

HÖRTER, R. (1956). Ein Beitrag zum Virusabort des Schafes. **[Virus abortion in sheep.]**—*Mh. Tierheilk.* **8,** 118-127. **764**

Salmonella abortus-ovis was isolated from 11 of 32 aborted ovine foetuses, *Fusiformis necrophorus* from one, in nine the aetiology was obscure. Ovine abortion virus was present in the remaining 11 foetuses and inclusion bodies were demonstrated microscopically. Inclusion bodies were present in lung sections of mice following nasal instillation with infected material, although they were not so numerous as in infected ovine cotyledons. Eight g. pigs infected intra-abdominally during the last third of pregnancy aborted within 20–24 hours but inclusion bodies were not demonstrable in either placenta, lochia or aborted foetuses. Controls injected with physiological saline did not abort.—E.G.

CARTER, G. R. & SCHRODER, J. D. (1956). **Virus pneumonia of pigs in Canada, with special reference to the role of pleuropneumonialike organisms.**—*Cornell Vet.* **46,** 344-354. **765**

Suspensions of lung tissue containing P.P.L.O. were instilled into the nostrils of pigs. Pneumonia ensued and P.P.L.O., but no bacteria were isolated. Pure cultures of P.P.L.O. administered by the same route did not cause pneumonia and the conclusion is arrived at that these organisms play only a secondary role. Histological lesions similar to those of virus pneumonia described by other workers were set up by nasal instillation of pneumonic lung tissue suspensions free from bacteria and P.P.L.O.—T.E.G.R.

HUPKA, E. & HÜTTEN, H. (1956). Mast- und Wachstumsuntersuchungen nach Zufütterung eines Antibioticums bei Jungschweinen mit chronischer Viruspneumonie. **[Effect of chlortetracycline on the growth and fattening of pigs with chronic virus pneumonia.]**—*Dtsch. tierärztl. Wschr.* **63,** 444-447. **766**

A total of 33 piglets 8 to 10 weeks old, all affected with virus pneumonia, were divided into 3 groups. Two groups were given 3 g. "Aurofac" (chlortetracycline) per animal daily in good quality feed over a 6-month period. Compared with controls of the third group, the average additional gain in weight was 3·5 kg. per animal in the first group and 6·0 kg. per animal in the second group.—E.V.L.

MOSCOVICI, C., GINEVRI, A. & MAZZARACCHIO, V. (1956). Isolamento su coltura di tessuti di un virus da enterite suina. **[Isolation of a porcine enteritis virus from faeces by a tissue culture technique.]**—*Zooprofilassi.* **11,** 417-426. [English summary.] **767**

A virus was isolated from an outbreak of enteritis in new-born pigs, by tissue culture on trypsinized monkey cells. The virus was pathogenic for epithelial cells, which it destroyed within 24 hours in culture, and for trypsinized pig kidney cells. It was not pathogenic for young or adult mice by intracerebral or intraperitoneal inoculation. It seems to belong to the poliomyelitis group of viruses and is actually neutralized by poliomyelitis antiserum type 8. The authors are investigating the serological relationship between human and animal enteric viruses, since the growth of this virus was inhibited by some sera from healthy children who were carriers of an enteric virus, not yet classified, but belonging neither to the poliomyelitis nor to the Coxsackie groups.

—I. W. JENNINGS.

CAMAND, R., MACKOWIAK, C., JOUBERT, L. & GORET, P. (1956). Dépistage sérologique comparatif des maladies de Carré et de Rubarth chez le chien. I. Technique de la réaction de fixation du complément. **[Serological diagnosis of distemper and virus hepatitis in dogs. I. Complement-fixation test.]**—*Bull. Acad. vét. Fr.* **29,** 185-195. Discussion: pp. 214-219. **768**

I. The authors described a semi-quantitative c.f. test with 100% haemolysis, using antigens against both viruses prepared as described by Mansi [*V.B.* **26,** 462] and reference hyperimmune sera prepared in foxes (hepatitis) and dogs (distemper). In tests on 200 sera from clinically healthy dogs and from others either affected with or convalescent from distemper-like disease ("maladie du jeune âge"), the results were read after 30 min. at 37°C. The test gave satisfactory results for canine virus hepatitis, but it was considered too early to judge whether the reactions for distemper were equally specific; dual reactions in strong dilutions were not uncommon, and in such cases further testing with 50% haemolysis seemed desirable. The main obstacle was the high percentage of strongly anti-complementary sera. [Unheated canine serum is not anti-complementary.]—W. MANSI.

I. ILLARTEIN, R., CAMAND, R., MACKOWIAK, C., GAMBON, M., JOUBERT, L. & GORET, P. (1956). Dépistage sérologique comparatif des maladies de Carré et de Rubarth chez le chien. II. Premiers résultats dans un chenil militaire d'Allemagne. Existence chez le chien de sensibilisatrices pour le virus de Rubarth. **[Serological diagnosis of distemper and virus hepatitis in dogs. II. Preliminary study of a military kennel in Germany.]** —

Bull. Acad. vét. Fr. **29,** 197-205. Discussion: pp. 214-219. **769**

11. CAMAND, R., MACKOWIAK, C., GAMBON, M., JOUBERT, L. & GORET, P. (1956). Dépistage sérologique comparatif des maladies de Carré et de Rubarth chez le chien. III. Premiers résultats en France. Existence chez le chien de sensibilisatrices spécifiques pour les 2 virus. Rareté des réactions positives vis-à-vis du virus de l'hépatite contagieuse. [**Serological diagnosis of distemper and virus hepatitis in dogs. III. Preliminary studies in France.**]—*Ibid.* 207-214. Discussion: pp. 214-219. **770**

I. Of 33 clinically healthy dogs in a French army kennel in Germany, the sera of 17 were anti-complementary; of the 16 tested, 8 were positive, 2 doubtful reactors and 6 negative to the complement-fixation test for canine virus hepatitis. Of the 8 positive reactors, 4 reacted also to *Leptospira icterohaemorrhagiae* antigen, and one of the two doubtful reactors gave a doubtful reaction also to this antigen. Of 39 dogs that were acutely ill, the sera of 18 were anti-complementary; of the 21 tested, 10 were positive and 11 negative for virus hepatitis, and 6 of the 10 positive reactors were also positive for *L. icterohaemorrhagiae*. With one exception the healthy dogs which were reactors to the hepatitis virus antigen were those that had been longest in Germany.

II. Of serum samples from 37 French dogs, 4 were anti-complementary; of the 33 tested, 3 were positive, 3 doubtful, the rest negative to the c.f. test for canine virus hepatitis. Of 44 dogs with various diseases, the sera of 7 were anti-complementary; of the 37 tested, one gave a positive and one a doubtful reaction, the remainder being negative. Nearly half these dogs gave a positive reaction to distemper antigen.—F.E.W.

GROULADE, P. & DRIEUX, H. (1956). Premier cas de maladie de Rubarth observé en France. [**First case of canine virus hepatitis in France.**]—*Bull. Acad. vét. Fr.* **29,** 177-180. Discussion: pp. 180-181. **771**

An account of a fatal case in a 2-year-old bitch. The diagnosis was confirmed histologically.—F.E.W.

MYKYTOWYCZ, R. (1956). **The effect of season and mode of transmission on the severity of myxomatosis due to an attenuated strain of the virus.**—*Aust. J. exp. Biol. med. Sci.* **34,** 121-132. **772**

Using wild rabbits and an attenuated Uriarra strain of myxoma virus, M. found that the severity of the disease is greatly influenced by mode of infection and variation in seasonal temperature. Mosquito-bite infections and intradermal inoculation caused a more severe disease and higher mortality than did contact infections. There was a higher mortality rate during the winter than in the warmer months. Evidence is presented suggesting that the Uriarra is a single strain of virus and not a mixture of virulent and avirulent strains.—W. R. SOBEY.

CHAPRONIERE, D. M. (1956). **The effect of myxoma virus on cultures of rabbit tissues.** —*Virology* **2,** 599-610. [Author's summary copied *verbatim.*] **773**

A series of five passages of myxoma virus was made in tissue cultures of rabbit kidney epithelium. Although the growth curves of myxoma in rabbit kidney epithelium and heart fibroblasts are similar, the morphological changes induced by the virus in the two tissues differ considerably. In epithelium, eosinophilic inclusions are formed and nuclei become vacuolated whereas in fibroblasts large stellate cells are produced. These cell changes parallel those found in the epidermis and dermal tissues of myxomatous skin lesions.

SCOTT, G. R., GIBSON, M. A. & DANSKIN, D. (1956). **The reappearance of Newcastle disease in Kenya.**—*Bull. Epiz. Dis. Afr.* **4,** 65-68. [French summary p. 131.] **774**

During June–August 1955 there were 11 outbreaks of Newcastle disease with a mortality over 90% in the Nairobi area. The epizootic was checked by slaughter of all fowls on infected premises. The possible sources and spread of infection are discussed.—T.E.G.R.

HAYASHI, N. (1956). [**Multiplication of the Newcastle disease virus in tissue culture. I. Behaviors of the virus in cultures of chicken embryo, adult chicken, and some mammalian tissues.**]—*N. I. B. S. Bull. biol. Res., Tokyo.* **1,** In English: pp. 79-86. In Japanese: pp. 169-173. **775**

The propagation of Newcastle disease virus in tissue cultures of spleen from adult fowls was less than in cultures of embryonic tissues. The yield from adult spleen was, however, improved if the tissue fragments were made to adhere to rice paper, which was then placed in a culture vessel before the addition of nutrient medium. This modification of technique did not improve the yield of virus from embryonic tissues. The virus could not be propagated in cultures of various mammalian tissues.—R.M.

ŠKODA, R. & ŽUFFA, A. (1956). Vyhodnotenie hyperimúnneho séra proti Newcastelskej chorobe sérologickymi metódami s rozličnymi kmeňmi vírusu. [**Evaluation of hyperimmune Newcastle disease serum.**]—*Vet. Čas.* **5,** 229-236. [In Slovak. German and Russian summaries.] **776**

Batches of Newcastle disease serum from a Slovak serum institute, prepared from fowls and turkeys hyperimmunized with Hertfordshire strain, were tested by the haemagglutination-inhibition test and by serum neutralization, using 17 different strains of virus.—E.G.

NAKAMURA, J., MIYAMOTO, T. & NAGASHIMA, H. (1956). [**Studies on Newcastle disease vaccine added with aluminium hydroxide gel.**]—*N. I. B. S. Bull. biol. Res., Tokyo.* **1,** In English: pp. 69-77. In Japanese: pp. 159-168. **777**

When aluminium hydroxide gel was added to formolized Newcastle disease vaccine, prepared from infected chick embryos, reliable immunity was obtained by i/m injection of the vaccine. In the absence of aluminium hydroxide, the vaccine was effective only when administered intravenously.—R.M.

LULIĆ, V. & SPALATIN, J. (1956). Intranazalna vakcina atipične kuge peradi za piliće. [**Intranasal application of Newcastle disease vaccine.**] — *Vet. Glasn.* **10,** 424-429. [In Croat. English summary.] **778**

A note on the use of strain B_1, a Newcastle disease virus of low virulence [*V.B.* **20,** 931 & 3027; **22,** 1354]. Satisfactory immunity following intranasal application was obtained in preliminary field trials with 2,900 chicks 3, 10 and 21 days old. The vaccine was innocuous. Further testing was being carried out.—E.G.

RUSSEFF, C. G. (1956). Mengenabhängigkeitsverhältnis zwischen interferierenden Virusstämmen der atypischen Geflügelpest bei Versuchen an Hühnern. [**Quantitative relationships between interfering strains of Newcastle disease virus in fowls.**] — *Arch. exp. VetMed.* **10,** 207-210. **779**

In a first series of experiments, R. injected the "Mukteswar" Newcastle disease vaccine virus i/v followed by virulent virus i/m after varying intervals from 0 to 21 hours. In a second series, the non-pathogenic and the virulent viruses were injected i/m simultaneously. In both series, there was an immediate interference phenomenon if the dosages of the two types of virus were the same, and a delayed interference if the non-pathogenic virus was given in the smaller dosage.—E.V.L.

WEDGWOOD, R. J., GINSBERG, H. S. & PILLEMER, L. (1956). **The properdin system and immunity. VI. The inactivation of Newcastle disease virus by the properdin system.** —*J. exp. Med.* **104,** 707-725. [Authors' summary modified.] **780**

The authors described experiments which indicate that the properdin system is an inhibitor of Newcastle disease virus. Inhibition of the virus required all the known components of the properdin system: properdin, all four components of complement, and magnesium; the removal of any one constituent resulted in a loss of inhibition; the replacement of the constituent restored anti-viral effect. The inhibition of virus was dependent on temperature. The process of inhibition by serum resulted in a decrease in the amount of properdin available in the serum without any measurable effect on the components of complement. The prolonged incubation of inactive serum-virus mixtures with cation-exchange resin resulted in the restoration of some, but not all, of the haemagglutinating activity of the virus. The requirements of the properdin system and the implication of these findings were discussed.

HANSON, L. E., WHITE, F. H. & ALBERTS, J. O. (1956). **Interference between Newcastle disease and infectious bronchitis viruses.**—*Amer. J. vet. Res.* **17,** 294-298. [Authors' summary modified.] **781**

Mixtures containing a constant quantity of infectious bronchitis virus (IBV) and varying concentrations of Newcastle disease virus (NDV) were injected into susceptible chickens. Interference with Newcastle disease virus was greater when the IBV was in excess and less when NDV was in excess. Interference by IBV was limited by previous freezing of NDV. There was no interference when IBV was administered one week before NDV. NDV was more virulent in allantoamniotic fluid than in nutrient broth. Saline diluent had a deleterious effect on NDV.

AYFANTIS, S. (1956). [**Infectious bronchitis of fowls in Greece.**]—*Delt. Hellen. kten. Hetair.* **2,** No. 21. pp. 3-11. [In Greek. French summary.] **782**

A study of the virus of avian infectious bronchitis, isolated for the first time in Greece.

—R.M.

TAJIMA, M. (1956). [**Pathological findings of infectious bronchitis-like disease in chickens prevalent in Tokyo and Kanagawa prefectures in 1954.**]—*N. I. B. S. Bull. biol. Res.,*

Tokyo. **1**, In English: pp. 95-100. In Japanese: pp. 183-186. **783**

The lesions in infectious bronchitis of fowls in Japan were identical with those of fowls experimentally infected with infectious bronchitis virus of American origin.—R.M.

FAHEY, J. E. & CRAWLEY, J. F. (1956). **Propagation of infectious bronchitis virus in tissue culture.** — *Canad. J. Microbiol.* **2**, 503-510. **784**

Two strains of infectious bronchitis virus grown in chick embryos were used in the study. The synthetic medium used was a modification of Morgan's Medium 199 known as Medium 597 and was enriched by the addition of 20% horse serum and 2% chick embryo extract. Various types of minced tissue were used including chorio-allantoic membrane, membrane with embryo, and embryo heart. Other cells utilized in the study include Earle's L strain of cells from the mouse, and trypsinized monkey cells. No cytopathogenic effect was induced by either strain of the virus on any of the cells used. Nevertheless apparent growth of the virus occurred in the cells originating from the chick embryo and also in the trypsinized monkey kidney cells. The authors postulated that the phenomenon of virus multiplication without the induction of cytopathogenic effect *in vitro* may be analogous to that which occurs in the intact animal and that production of virus at a low level in a recovered flock may serve to perpetuate infection in nature.

—L. W. MACPHERSON.

HAUFFE. (1956). Beitrag zur Behandlung der ansteckenden Luftröhrenentzündung der Hühner mit dem Breitspektrumantibiotikum Aureomycin. **[Chlortetracycline treatment in avian infectious laryngo-tracheitis.]**—*Prakt. Tierarzt.* No. 11. 321-322. **785**

Seven outbreaks of avian infectious laryngotracheitis were successfully treated with chlortetracycline given in the food and water. Severely affected fowls also received twice daily 4 drops of a suspension of oxytetracycline.

—M.G.G.

SIEBURTH, J. McN. & JOHNSON, E. P. (1956). **Transmissible enteritis of turkeys (bluecomb disease): I. Preliminary studies.**—*Poult. Sci.* **35**, 1172. **786**

The agent of an outbreak of bluecomb disease in a flock of 3,500 turkey poults was filtrable and appeared to resist antibiotics *in vitro*. Treatment with oxytetracycline, however, reduced the mortality in experimentally infected poults. Inoculated chick embryos failed to maintain infectivity.—M.G.G.

MORITSCH, H. (1956). Virologische Untersuchungen über den Einfluss von Penicillin und Cortison auf die experimentelle Infektion der Maus mit Psittakosisvirus. **[Influence of penicillin and cortisone on psittacosis in mice.]**—*Wien. klin. Wschr.* **68**, 80-83. **787**

Large amounts of penicillin in the blood serum did not prevent psittacosis virus from entering the cells of the host, but appeared to inhibit the formation of elementary bodies. The action of cortisone was similar to that observed by other workers.—R.M.

GIROUD, P., JADIN, J., ROGER, F., DUMAS, N., POT, C. & PITALLIER, M. (1955). Infections transmises de l'animal à l'homme. Hépatonéphrites ayant comme agent étiologique un élément à côté de la psittacose, à la limite inférieure des rickettsies. **[Hepatonephritis in animals and man caused by an organism related to the psittacosis group and to rickettsia.]** — *Bull. Soc. méd. Hôp. Paris.* **71**, 548-550. **788**

Serum from a veterinary surgeon and a horse dealer, having symptoms of febrile hepatitis and nephritis, reacted to the "neorickettsial" [lymphogranuloma-psittacosis group of viruses] antigens X.14, V.14 and T.13. Serum from 5 out of 7 cattle and several horses attended by these persons before illness commenced, reacted to the same antigens. Four of the cattle had aborted 8 months previously, but the horses were apparently healthy. [See also *V.B.* **26**, 1659 & 1986.] —R.M.

ROLLY, H. & BAUER, F. (1956). Beobachtungen bei Ausbruch der Kerato-Conjunctivitis rickettsiosa in Hessen. **[Outbreak of rickettsial kerato-conjunctivitis in cattle and foals in Hessen.]**—*Tierärztl. Umsch.* **11**, 253-255. **789**

Rickettsia organisms were demonstrated in conjunctival secretions during an outbreak of kerato-conjunctivitis affecting 24 cattle and 2 foals. Severely affected animals were serologically negative for brucellosis and only 3 were positive for leptospirosis. The condition responded to local treatment with a proprietary antiseptic ointment, and tetracycline and chloramphenicol ointment.—M.G.G.

CVJETANOVIĆ, V. (1956). O riketsiozama ovaca u Dalmaciji. **[Ovine *Rickettsia* infections in Dalmatia.]**—*Vet. Arhiv.* **26**, 135-141. [In Croat. English and French summaries.] **790**

During an investigation into the aetiology

of "Southern wind disease" [*V.B.* **23,** 2356; **24,** 208] occurring in sheep when brought from upland pastures to the lowlands of Dalmatia, it was found that under that name were included three different entities: tick-borne fever, tick paralysis and a heartwater-like disease, hitherto not known to occur in Yugoslavia. Details were given of the demonstration of rickettsial inclusion bodies in sheep from infected flocks.—E.G.

BAUER, D. J. & BRADLEY, P. L. (1956). **The xanthine oxidase groups. A phenomenon associated with the multiplication of neurotropic viruses.**—*Brit. J. exp. Path.* **37,** 447-460. [Authors' summary modified.] **791**

In infections of mouse brain with 47 neurotropic viruses the xanthine oxidase activity is increased in all cases, the extent of the increase ranging up to 13 times the xanthine oxidase activity of normal mouse brain. The geometric mean of the xanthine oxidase activity of the brain at the height of infection is constant and characteristic of the particular virus. When arranged according to the order of the xanthine oxidase mean value the viruses fell into 5 separate groups. There is some evidence that the xanthine oxidase activity bears a relationship with such other functions of viruses as antigenic properties, haemagglutination, the receptor gradient and oncolysis. In certain instances the number of enzyme molecules which appear in the brain is approximately equal to the number of virus particles. The formation of new enzyme is closely associated with the process of virus multiplication. The enzyme cannot in general be situated inside the virus particle, but may be related to soluble antigen. The xanthine oxidase group phenomenon can be used as a means of distinguishing between certain viruses hitherto considered to be identical; it is suggested that it might be of some value in typing, and in the isolation of viruses which are not apparently pathogenic for laboratory animals.

SPRUNT, D. H. & FLANIGAN, C. C. (1956). **The effect of malnutrition on the susceptibility of the host to viral infection.**—*J. exp. Med.* **104,** 687-706. [Authors' summary modified.] **792**

The effect of progressive long-term dietary protein depletion on susceptibility to virus infection was studied with (1) swine influenza in mice and (2) Rous sarcoma virus in fowls. A cyclic relationship between the protein nutrition of the host and susceptibility to infection was demonstrable, with phases of increased and decreased susceptibility. The relative resistance of the host on low protein intake was a function of the duration of maintenance on incomplete diet before inoculation of virus, and consequently a function of the host's state of depletion. The cyclic change in susceptibility of animals on a low protein diet was characterized by an initial phase of increased susceptibility, a secondary phase of increased resistance, and a final phase of increased susceptibility. It is suggested that these phases result from metabolic changes within the host during the process of dietary protein depletion. The phases of resistance were roughly correlated with periods of utilization of depot fat (increased susceptibility), utilization of reserve protein (decreased susceptibility), and tissue breakdown subsequent to protein starvation (increased susceptibility).

Many previously published theories of the interplay between susceptibility to viruses and host nutrition maintained that malnourishment led to increased resistance; but the above findings are evidence that the effect of deficiency on the host cannot be explained simply on the basis of an inhibition of growth of virus resulting from retarded cellular metabolism in the host. Protein deficiency did not produce an "all-or-none" effect, but a series of reproducible phases of increased and decreased resistance. The results suggest that the phases of susceptibility in the protein-deficient host demonstrate the dynamic interrelationship between the physiological state and the resistance of the host. Dietary influences in the normal host, by producing similar metabolic changes, could have analogous effects on innate resistance. It is believed that this leads to a clearer and more dynamic theory of resistance to virus infections in the normal individual.

TAMM, I. (1956). **Antiviral chemotherapy.**—*Yale J. Biol. Med.* **29,** 33-49. **793**

Agents capable of retarding or stopping virus multiplication are discussed. The mode of action of these substances is not always clearly established. In some cases there may be a direct inactivation of virus particles, in others an effect on the tissue responses which make up the composite picture of the disease. The agents under discussion are: naturally occurring substances and synthetic chemicals. The agents reviewed in the first group are: capsular polysaccharide of *K. pneumoniae;* N5-8450 (from *Penicillium stoloniferum*); and helenine (from *Penicillium funiculosum*). The second group includes: phenoxypyrimidine; benzaldehyde thiosemicarbazone; isatin thiosemicarbazone; aliphatic oxime thiosemicarbazone; 2, 6-diaminopurine; 2-hydroxy-1, 4-naphthoquinonimine; α-aminosulphonic acid; quinacrine; and 5, 6-dichloro-1-β-D-ribofuranosylbenzimidazole.—T.E.G.R.

LUDWIG, R. (1956). Bericht über Praxisversuche mit Virolitin, einem neuen Wirkstoff gegen Viruskrankheiten. [**Field trials with "virolitin", a new agent against virus diseases.**]—*Schweiz. Arch. Tierheilk.* **98,** 406-409. [English, French and Italian summaries.] **794**

Good results were claimed in the treatment of cases of dog distemper, feline enteritis, swine influenza, bovine malignant catarrh, calf pneumonia and cow pox, with virolitin, a new antibiotic prepared from cultures of *Candida albicans* and *C. parakrusei.* [See also *V.B.* **27,** 148.]—E.V.L.

See also absts. **687** (S. cholerae-suis bacteriophage); **965** (report, Mukteswar Institute); **966** (book, sex in microorganisms).

IMMUNITY

COONS, A. H. (1956). **Histochemistry with labeled antibody.** In International Review of Cytology. Vol. V. pp. 1-23. [London: Academic Books Ltd.] [Author's conclusion modified.] **795**

The use of antibody coupled to a visible label permits the microscopic study of the complex biological substances in cells. The method has so far, however, been used principally in immunology. A start has been made in the investigation of antigens normally present in cells. The main problem with these immunohistochemical procedures is the purification of the antigenic material. Unexpected reactions are inevitable as small quantities of contaminating antigens stimulate a disproportionate amount of antibody. The antigenic complexity of the erythrocyte is an indication of the complexity of other cell types.

HALICK, P. & SEEGERS, W. H. (1956). **Antigenic properties of purified bovine prothrombin.** —*Amer. J. Physiol.* **187,** 103-106. [Authors' abst. copied *verbatim.*] **796**

Purified bovine prothrombin preparations were found to produce immune serum in rabbits. This immune serum possessed precipitating antibodies capable of specific reaction with these preparations. Prothrombin activity was removed coincidentally with specific precipitation. A second antigenic component was evident in these preparations. It is believed that these procedures demonstrated that bovine prothrombin possesses antigenic qualities.

ROBERTSON, P. W. & LEONARD, B. J. (1956). **Some delayed complications of inoculation.**—*Brit. med. J.* Nov. 3rd. 1029-1032. **797**

About 0·3% of 200,000 young recruits had major delayed reactions 7 to 10 days after vaccination and T.A.B.T. inoculation. There were acropathies closely resembling acute rheumatic fever or acute rheumatoid arthritis; various purpuric manifestations identical with immunoallergic vascular purpuras, and changes in the reticulo-endothelial system including spleen, liver, lymph nodes and bone marrow.—E.V.L.

GLICK, B., CHANG, T. S. & JAAP, R. G. (1956). **The bursa of Fabricius and antibody production.**—*Poult. Sci.* **35,** 224-225. **798**

Six-month-old pullets that had had the bursa of Fabricius removed when 12 days old were used for the production of *Salmonella typhi-murium* antibody. Of these 6 died after injection of antigen, 3 survived but failed to produce antibody, while intact birds suffered no ill effects and produced normal titres of antibodies [it is not stated how many birds were used]. The possible role of the bursa in *S. typhi-murium* antibody production was studied on 168 chickens 85 of which had the bursa removed at 2 weeks of age. Antibodies were found in 8 of 75 treated birds as compared with 63 of 73 controls. It is concluded that the bursa plays a vital role in the production of *S. typhi-murium* antibodies.—T.E.G.R.

STÖCKL, W. (1956). Elektrophoretische Serumuntersuchungen bei Haustieren unter normalen Bedingungen und nach Antigenzufuhr. (Mit einem Beitrag über die Wirkungsweise von Adsorbatvakzinen.) [**Electrophoretic examination of normal serum of domestic animals and after administration of antigen. The action of adsorbed vaccines.**]—*Wien. tierärztl. Mschr.* **43,** 150-157; 226-241; 402-430. [English, French and Italian summaries.] **799**

S. stated that the plasma protein content in horses, cattle, pigs, sheep and fowls was subject to such variation that relative average protein values were of little significance. Administration of antigen always produced an increase in the γ-globulin fraction. Inoculation with virulent bacteria caused at first an increase in α-globulins, whereas the β-fraction remained more or less constant. In serum horses, immunized against *Bact. coli,* swine erysipelas, fowl cholera and porcine haemorrhagic septicaemia a specific T-fraction was present. The T-fraction was also observed in the serum of cattle inoculated with large amounts of *Bact. coli.* Following immunization of fowls against fowl plague [? Newcastle

disease.—Ed. *V.B.*] with an adsorbed vaccine, a specific L-fraction was present in the serum.

S. stated that it may be assumed that there is no dissociation between aluminium and antigen at the site of injection but that these pass into the blood stream together.—E.G.

CAMERON, J. (1956). **Anaphylactic shock in mice.**—*Brit. J. exp. Path.* **37,** 470-476. [Abst. from Survey of paper, p. i.] **800**

It was shown that the W-Swiss strain of mice could be sensitized to foreign proteins by doses as small as those effective in most other animals. C. compared the action of serum and individual plasma proteins from different animals and studied the effect of different routes of injection and numbers of injections for sensitization: the shocking dose had to be given intravenously. Shock could usually be prevented by giving an anti-histamine.

See also absts. **660-666** (TB.); **667-668** (fluorescent antibody in melioidosis); **683** (serology of the E. coli group); **688** (serological reaction in S. pullorum infection); **689** (antigenic variation in S. pullorum); **690** (egg-transmission of S. pullorum); **694-699** (brucellosis); **700-704** (leptospirosis); **705** (clostridial vaccines); **738** (components of the c.f test); **739** (vitamin A content of serum during F. & M. disease vaccination); **743** (Aujeszky's disease); **744** (rabies); **746** (sheep pox); **747** (goat pox); **749-750** (fowl pox); **753-754** (E.I.A.); **756** (infectious cough of horse and human influenza); **761** (Rift Valley fever); **768-770** (dog distemper); **775-781** (Newcastle disease); **823** (allergic reaction for diagnosis of ascarids in pigs).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

BULJEVIĆ, S. & RENDIĆ, Đ. (1956). Jedan zanimljiv nalaz larvi hypoderme bovis u kičmenom kanalu goveda. **[Presence of *Hypoderma bovis* larvae in the spinal canal in a heifer.]**—*Vet. Glasn.* **10,** 531-532. [In Croat. German summary.] **801**

A report on the presence of 35 second-stage *H. bovis* larvae, found during meat inpection in the epidural space of the spinal canal of a heifer. —E.G.

CHAMBARD, P., TAPERNOUX, A., GASTELLU, C. & MAGAT, A. (1956). Rapport présenté au Congrès de 1956 de la Société Internationale pour l'amélioration des Cuirs et Peaux bruts. (International Hide and Allied Trades Improvement Society). **[Report of the Research Institute for the Hide Industry on tests of insecticides against the warble fly.]**—*Bull. Ass. franç. Chim. Cuir.* 227-241. **802**

Dusting of cattle during the summer with insecticides having a high residual power did not yield satisfactory results. Early treatment, at the beginning of winter, was effective when "Bayer L 13/59" was applied to the skin. This preparation was also used in spring to destroy third-stage larvae, and was as effective as rotenone. Malathion was less effective, while phenothiazine and "Aramite" were ineffective. —R.M.

GRANETT, P. & HANSENS, E. J. (1956). **The effect of biting fly control on milk production.** —*J. econ. Ent.* **49,** 465-467. **803**

Each of 2 herds was divided into 3 similar groups. One was sprayed weekly with a water emulsion of methoxychlor, one with methoxychlor plus butoxy propylene glycol, and one left untreated. For 5–7 weeks there were fewer flies on the treated cattle; for one day following the use of methoxychlor there was an increase in milk production, and for two days following the use of the second preparation the increase averaged 7·5 lb. per cow.—W. E. PARISH.

GOODWIN, W. J. & GRESSETTE, F. R., JR. (1956). **Residual house fly control in dairy and beef barns in South Carolina.**—*J. econ. Ent.* **49,** 622-624. **804**

Control of *Musca domestica* for 4 weeks or longer was achieved in dairy byres sprayed with a concentration of 16 lb. of 25% "Diazinon" wettable powder in 100 gal. water or 2 gal. of 55% "Malrin" emulsion (containing 18% malathion and 35% "Perthane") in 100 gal. water. Two other proprietary organic phosphate insecticides were also satisfactory. Control was poor in byres of beef cattle which are cleaned only a few times a year. Treatment only of the areas frequented by flies was as efficient as treatment of the whole building.—M.G.G.

DAVIDSON, G. (1956). **Insecticide resistance in *Anopheles gambiae* Giles: a case of simple Mendelian inheritance.**—*Nature, Lond.* **178,** 863-864. **805**

A strain of *A. gambiae* resistant to the dieldrin-chlordane-benzene hexachloride group of insecticides was crossed with a susceptible strain. Inheritance of resistance was found to be monofactorial with incomplete dominance. This indicates the necessity of a change in the method of detecting resistance in the field. Instead of a comparison of LD_{50} in susceptible and resistant populations, the minimum LD_{100} should be determined in the susceptible population and the suspected population exposed to this dosage.—JAS. G. O'SULLIVAN.

NELSON, W. A. (1956). **Mortality in the sheep ked, *Melophagus ovinus* (L.), caused by *Trypanosoma melophagium* Flu.** — *Nature, Lond.* **178,** 750. **806**

T. melophagium caused death in *M. ovinus* by blockage of the posterior mid-gut with masses of crithidia. Many metacyclic forms were present in the hind gut.—JAS. G. O'SULLIVAN.

RODRIGUEZ, J. L., JR. & RIEHL, L. A. (1956). **Four pesticides tested against the fowl tick infecting turkeys in feed lots.**—*J. econ. Ent.* **49,** 713-714. [Authors' summary modified.] **807**

Four organic insecticides were applied as aqueous sprays at high pressure to wooden feeding troughs for control of *Argas persicus,* on turkeys in large range-type commercial fattening pens. Sprays of 1% malathion, made from the 57% emulsifiable liquid formulation, and of 1% Diazinon, made from the 25% formulation, gave complete control of the fowl tick for the observation period of 21 days following application. Sprays of 1·0% Chlorobenzilate and of 1% Rohm & Haas FW-293, made from the 25% emulsifiable liquid, gave good initial kills but failed to eradicate the tick infestation. When slaughtered for market the skin of the turkeys from the malathion and the Diazinion treated pens was free from blemishes caused by tick-bites.

SWEATMAN, G. K. (1956). **Seasonal variations in the sites of infestation of *Chorioptes bovis,* a parasitic mite of cattle, with observations on the associated dermatitis.**—*Canad. J. comp. Med.* **20,** 321-336. [French summary.] **808**

S. recorded the results of observations on a single herd of 38 animals over a period of 12 months. In his opinion the pasterns, especially the hind ones, are important sites of infestation, although isolations were made from all parts of the body. Highest incidence of infested animals occurred in spring, but summer pasture conditions were necessary to bring about a natural reduction in the number of mites. Lesions in two heifers, housed all the year round, spread from the lower hind limbs upward along the sides and back. In animals turned out to pasture seasonally the lesions occurred mainly on the escutcheon and mid-posterior thighs. The relationship of lesions to the presence of mites is discussed and S. concludes that the lesions are caused by some unknown mechanism other than the direct rasping of the chelicerae of the mites.—D. MITCHELL.

SWEATMAN, G. K. (1956). **Effect of lindane on the hatchability of the eggs of *Chorioptes bovis* (Gerlach).** — *J. Parasit.* **42,** No. 4. Sect. 2. (Suppl.) p. 36. **809**

Eggs of the mite failed to hatch when incubated at 35°C. on filter paper wetted with 0·046% lindane, but hatching occurred on lindane-treated filter paper which had been allowed to dry.—JAS. G. O'SULLIVAN.

PRISELKOVA, D. O. & ZORINA, N. R. (1955). **[Demodectic mange in sheep.]** — *Trud. XL Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina.* Stavropol, 1953. pp. 264-268. [In Russian.] **810**

Demodex mites were identified in histological sections of skin from 14 out of 61 apparently normal slaughtered sheep. Mites were not found in the internal organs. There were no skin lesions among other sheep or dogs on the farms from which the slaughtered sheep had come. —R.M.

FURMAN, D. P. & WEINMANN, C. J. (1956). **Toxicity of malathion to poultry and their ectoparasites.**—*J. econ. Ent.* **49,** 447-450. **811**

1% Malathion emulsion dips proved safe for fowls aged 9 months and turkeys aged 12–15 weeks, though "temporary abnormal symptoms" were described in some of the fowls. 2% dips killed one and caused "symptoms" in 2 more of 8 turkeys; 4% was lethal to all birds. In field tests 3% emulsion spray at 2·5 and 4 gal./1,000 linear ft. of the roosts controlled the body louse *Menacanthus stramineus* (Nitz.) (*Eomenacanthus stramineus*), but 1% spray at 3·5 and 4 gal./1,000 ft. was only partially effective. Residual protection persisted for 3–5 weeks. In experiments to control the fowl tick *Argas persicus,* 3% malathion spray killed the ticks only if they remained in contact with the sprayed surface for many hours. A 2% aldrin spray gave more efficient control. 3% malathion spray at 9·7 ml./sq. ft. eradicated an infestation of *Dermanyssus gallinae.*—W. E. PARISH.

MARCH, R. B., METCALF, R. L., FUKUTO, T. R. & GUNTHER, F. A. (1956). **Fate of P^{32}-labeled malathion sprayed on Jersey heifer calves.**—*J. econ. Ent.* **49,** 679-682. [Authors' summary slightly modified.] **812**

The fate of P^{32}-labelled malathion and metabolites was studied in two calves after two spray applications each (2 weeks apart) of 1 pint 0·5% P^{32}- malathion water emulsion. The malathion was rapidly absorbed and metabolized and was eliminated, in the urine principally as water-soluble metabolites and degradation products (96 to 99%). The amount eliminated was greatest during the first 24 hours and then gradually decreased. The two calves were killed 1 and 2 weeks after the second spraying, and residues in 10 cuts of the meat and in tongue, brain, liver, heart, rumen, suet, bone, marrow

and hide were determined radiometrically. In all tissues except the hide the residues were in the form of water-soluble metabolites and degradation products, no unchanged malathion or chloroform-soluble metabolites being found. In the hide only 2·7% remained as unchanged malathion and chloroform-soluble metabolites 2 weeks after the second spraying. Total residues in the meat cuts were low ranging from 0·05 to 0·15 p.p.m. Higher residues (0·2 to 2 p.p.m.) were found in thymus, thyroid, pancreas, liver, and bone. The highest residues (3 to 19 p.p.m.) were found in the hide. Chemical analyses for malathion in tissues of the foreleg, hindleg and rump of the two heifers showed no detectable malathion (less than 0·2 p.p.m.).

HIEPE, T. (1956). Beitrag zur Technik der Ektoparasitenbekämpfung bei Schafherden. **[Control of ectoparasites on sheep by pressure-spraying with powdered parasiticides.]** —*Mh. Vetmed.* **11**, 490-492. **813**

A spray-gun connected by a tube to a source of compressed air is described for treating sheep with powdered insecticides. By this method 75–150 sheep can be treated in an hour. Its advantages over dipping are that it does not spread disease, it cannot harm the wool and it can be used at any time of the year, except during the lambing season.—M.G.G.

RAUN, E. S. (1956). **Chicken louse and mite control with malathion formulations.** — *J. econ. Ent.* **49**, 628-629. **814**

Malathion, applied as a 1% spray at the rate of 1 gal. per 1,000 sq. ft. or as a 4% dust at the rate of 1 lb. per 20 sq. ft., gave complete control of *Eomenacanthus stramineus, Menopon gallinae, Goniocotes gallinae,* and *Dermanyssus gallinae* when the fowls were kept in the houses during spraying. Egg production increased by 20–50%. There were no insecticide residues in birds slaughtered 7 days after treatment.

—M.G.G.

See also abstr. **735** (atlas of ixodid ticks and blood parasites); **752** (ticks as encephalitis vectors in Malaya).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

GUILHON, J. (1956). Recherches sur le traitement spécifique de la dicrocoeliose ovine. **[Specific treatment of *Dicrocoelium lanceolatum* infestation in sheep.]**—*Rec. Méd. vét.* **132**, 733-749. **815**

An account of testing, in infested sheep, both for possible anthelmintic activity and for toxicity to the host, of numerous substances including those recommended by other workers as well as certain proprietary preparations marketed as specific for *D. lanceolatum*. None of the 40 substances and combinations tested were both effective against the fluke and its eggs and non-toxic to the host; 26 had no action on the fluke and 6 of these had harmful effects on sheep. Of the 3 commercial preparations none had any activity except at a dosage far in excess of that recommended. The results are set out clearly in tabular form. Only two mixtures were really toxic to the fluke, namely ether extract of male fern with hexachlorethane, crystal violet and sodium tetra-iodophenol; and hydroxyphenyl quinolinic acid with crystal violet and oxymethylamide pyridine carboxylic acid—particularly the latter mixture; but both were lethal to sheep.—F.E.W.

RONZHINA, G. I. (1955). **[Early diagnosis of *Coenurus* infestation in sheep.]**—*Trud. XL Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina.* Stavropol, 1953. pp. 220-228. [In Russian.] **816**

Three methods for the early diagnosis of *Coenurus cerebralis* infestation, tested on artificially infected sheep, were ophthalmoscopic examination of the retina, examination of the cerebrospinal fluid, and an allergic test. The retina was examined after instillation into the eye of 0·5% atropine soln. In infested sheep the papilla of the optic nerve was congested, irregular in outline, not clearly demarcated from the retina, and yellowish-grey instead of yellowish-pink. These changes appeared 1–2 months before the appearance of symptoms, and did not occur in sheep with hydatid cysts or *Oestrus ovis* infestation.

The cerebrospinal fluid of sheep with *Coenurus* had a higher protein content, higher cell count and higher pressure than the fluid from normal sheep or from the same sheep before infestation. For the allergic test 0·2 ml. of fresh fluid from a coenurus cyst was injected i/d into the lower eyelid. Like the other tests, it was claimed to be effective in detecting infestation before symptoms developed.—R.M.

ZIMMERMANN, W. J., SCHWARTE, L. -H. & BIESTER, H. E. (1956). **Incidence of trichiniasis in swine, pork products and wildlife in Iowa.** — *Amer. J. publ. Hlth.* **46**, 313-319. **817**

From examination of muscle samples during 1953/55 *Trichinella* larvae were found in 1 out of 2,184 pigs, 14 out of 119 rats, 31 out of

308 foxes, 1 out of 40 opossums, 2 out of 229 raccoons, 12 out of 85 mink, and 2 out of 4 coyotes. Larvae were also present in 18 out of 1,148 samples of sausage meat. The mode of transmission of trichinosis from wild animals to pigs was discussed.—**R.M.**

SCHMIDT, H. W. (1956). Vögel als Konduktoren von Trichinen. **[Wild birds as disseminators of *Trichinella*.]**—*Prakt. Tierarzt.* No. 10. 292-293. **818**

All carrion and flesh eating birds are potential disseminators of *Trichinella*. Their intestines should not be left where they can be found by dogs, cats and pigs. Fox and badger carcasses should be destroyed.—M.G.G.

LIEBMANN, H. & BOCH, J. (1956). Landwirtschaftliche Abwasserverwertung und Verwurmung der Haustiere. **[Agricultural use of sewage and helminth infestation in domestic animals.]**—*Berl. Münch. tierärztl. Wschr.* **69**, 208-211. **819**

The authors discussed the part played by sewage and abattoir effluent in the dissemination of helminth infestation of domestic animals. Faecal examination of cattle in a district where pastures had been irrigated with such effluents after sedimentation for less than 1½–2 hours showed that the incidence of infestation with gastro-intestinal nematodes was higher than in two non-irrigated districts. The cattle had been turned out on the pastures earlier than the prescribed 14 days after irrigation.

—E. J. L. SOULSBY.

VEGORS, H. H., BAIRD, D. M., SELL, O. E. & STEWART, T. B. (1956). **Parasitism in beef yearlings as related to forage availability and levels of protein feeding.**—*J. Anim. Sci.* **15**, 1199-1206. [Abst. from authors' summary.] **820**

The differences in numbers of parasitic larvae from animals under 3 different systems of management appeared to be related to the availability and consumption of forage. Calves from feeding pens without grass harboured the fewest larvae and the highest number of adult worms, while calves from pens with a limited amount of grass and calves penned on pasture had significantly higher numbers of parasitic larvae and fewer adult worms at P.M. examination. With the first two systems of management, animals fed a high protein diet had fewer larval stomach worms than those on low protein. Of the animals from pasture, those fed more grain and protein concentrate had much fewer larval stomach worms than those fed less protein.

JARRETT, W. F. H. & URQUHART, G. M. (1956). **The pathogenesis of bovine parasitic bronchitis.**—*Trans. R. Soc. trop. Med. Hyg.* **50**, 306. **821**

An account of a demonstration of lesions in parasitic bronchitis in cattle caused by *Dictyocaulus viviparus*, and also of sarcoma formation in the granulomatous lesions in the oesophagus in dogs infested with *Spirocerca lupi*.—W.A.P.

DOUGLAS, J. R., BAKER, N. F. & LONGHURST, W. M. (1956). **The relationship between particle size and anthelmintic efficiency of phenothiazine.**—*Amer. J. vet. Res.* **17**, 318-323. **822**

In studies on lambs naturally infected with nematode worms and mice artificially infected with *Nematospiroides dubius* it was observed that the efficiency of phenothiazine was inversely proportional to the diameter of the particles. The drug was 95% effective when the diam. was 1–2μ; and 70% when the diam. was 40–50μ; it was ineffective when the diam. exceeded 140μ. The effect on nematode egg production was also inversely proportional to the size of the particle.

—T.E.G.R.

MIHĂESCU, N. & STOICAN, E. (1956). Cercetări asupra valorii reacţiei alergice în diagnosticul ascaridiozei porcine în unităţi agricole. **[Value of the allergic reaction for the diagnosis of ascarids in pigs.]** — *Probl. Parazit. vet., Inst. Pat. Igien. anim., Bucureşti.* No. 4. pp. 49-56. [In Roumanian. Abst. from French summary.] **823**

The allergen used was hydrochloric acid extract of pig ascarids. Positive reactions, controlled by examination of the faeces, were obtained in 77·1%. Reactions were absent or very weak in animals with rickets, cachexia or in poor condition. This test is considered to be the only method of diagnosis in recent helminth infesta-

NICHOLS, R. L. (1956). **The etiology of visceral larva migrans. I. Diagnostic morphology of infective second-stage *Toxocara* larvae. II. Comparative larval morphology of *Ascaris lumbricoides, Necator americanus, Strongyloides stercoralis* and *Ancylostoma caninum*.**—*J. Parasit.* **42**, 349-362 & 363-399. **824**

I. Larvae of *T. canis* and *T. cati* were recovered from mice 24 hours to 6 months after infection, from the liver, lung, brain, heart and skin. Comparison of the larvae obtained by digestion of the tissues with those obtained from tions.

the embryonated eggs revealed that no development took place in the mouse except for slight

growth of the excretory cell. Sizes of the larvae are given and descriptions of their morphology with special reference to their identification in histological sections.

II. The comparative morphology of the tissue stages of *A. lumbricoides, N. americanus, S. stercoralis* and *A. caninum* is described and a short key given for identifying the transverse sections of the larvae. It is suggested that *A. caninum,* like *T. canis,* is capable of producing visceral larva migrans in man and may also be involved in the aetiology of tropical eosinophilia.
—W. E. Parish.

Dent, J. H., Nichols, R. L., Beaver, P. C., Carrera, G. M. & Staggers, R. J. (1956). **Visceral larva migrans. With a case report.**—*Amer. J. Path.* **32,** 777-802. **825**

A report on *Toxocara canis* infestation in a previously healthy 19-month-old infant. Death occurred from homologous serum hepatitis within about 3 months. Early in the illness there was abdominal distension with enlargement of the liver and general malaise and eosinophilia. Treatment given included the intensive administration of antibiotics. The child was a "dirt-eater" and had played with dogs. At about the fourth week of illness a laparotomy was done and a segment of liver removed for examination. Larvae of *T. canis* were found in the liver specimen. After apparent recovery the patient relapsed at about the 13th week of illness and died. P.M., microscopic granular lesions in which larvae were often demonstrable were present in several organs including the brain. The only lesions visible to the naked eye were in the liver. The authors suggested that nematode larvae in the c.n.s. might be responsible for puzzling nervous manifestations sometimes encountered clinically, and suggested that this infestation is commoner in children than is realised.—W.A.P.

Ehrenford, F. A., Richards, A. B., Abreu, B. E., Rockstahler, E. R., Weaver, L. C. & Bunde, C. A. (1955). **Trichuricidal activity of phthalofyne and certain related compounds.**—*J. Pharmacol.* **114,** 381-384. **826**

Phthalofyne was specific, effective and safe against *Trichuris vulpis* in dogs [see also *V.B.* **25,** 1398]. Some other esters of phthalic acid were ineffective.—R.M.

Divljanović, D. (1956). [**Incidence of *Fasciola, Echinococcus, Dictyocaulus* and *Cysticercus* in cattle and sheep in the Valjevo district of Yugoslavia.**]—*Vet. Glasn.* **10,** 66-67. [In Serbian.] **827**

Of 1,066 adult cattle 674 were infested with liver fluke, 251 with *Echinococcus* and 35 with both parasites. Five harboured *Dictyocaulus.* Of 955 young cattle 344 harboured liver fluke, 261 *Echinococcus,* 17 both parasites, 19 *Dictyocaulus* and 8 *Cysticercus tenuicollis.* Of 593 calves 4 were infested with liver fluke, 23 with *Dictyocaulus* and 19 with *Cysticercus.*

Of 2,742 adult sheep 1,596 harboured *Fasciola,* 296 *Echinococcus,* 437 both parasites, 92 *Dictyocaulus* and 105 *Cysticercus.* Of 3,345 lambs 127 were infested with liver fluke, 617 with *Dictyocaulus* and 494 with *Cysticercus*
—E.G.

Ozerskaya, V. N. (1955). [**Trials with "ditrazin" (diethylcarbamazine citrate) in *Muelleria* and *Dictyocaulus* infestations in sheep.**] —*Trud. XL -Plenum vet. Sect., Akad. sel'skokhoz. Nauk imeni Lenina.* Stavropol. 1953. pp. 237-246. [In Russian.] **828**

Diethylcarbamazine citrate, given by mouth at a dosage of 0·3–0·5 g./kg. body wt. or by s/c inj. at 0·1–0·2 g./kg., led to a striking reduction in the infestation of sheep and goats with *Muelleria* and/or *Dictyocaulus.* 355 sheep and 5 goats were used in the experiments.
—R.M.

See also absts. **728** (E. histolytica infection in g. pigs infested with Toxocara canis); **965** (report, Mukteswar Institute); **967** (book, schistosomiasis and fasciolíasis); **968** (book, helminthological diagnosis).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Siller, W. G. (1956). **A Sertoli cell tumour causing feminization in a Brown Leghorn capon.**—*J. Endocrin.* **14,** 197-203. **829**

Exploratory laparotomy in a capon, which exhibited transitional changes in plumage to a female pattern, revealed two tumours at the site of the gonads. Histologically they were Sertoli-cell tumours. The abnormalities in the plumage pattern were shown to be due to a prolonged secretion of oestrogen. This was considered to confirm that Sertoli cells secrete oestrogen. Attempts to transplant the tumour to healthy capons and cockerels were unsuccessful.
—F.E.W.

Ceretto, F. (1955). Contributo alla conoscenza della linfogranulomatosi maligna (morbo di Hodgkin) nel cane. [**Hodgkin's disease in**

the dog.]—*Ann. Fac. Med. vet. Torino.* **5**, pp. 63-87. [English, French and German summaries.] **830**

Hodgkin's disease was diagnosed in two dogs. In one case clinical examination revealed a large tumour in the renal area and enlargement of the palpable lymph nodes. P.M. findings included greyish-white nodules (up to the size of a chick pea) on the peritoneum, enlargement of the lymph nodes, slight enlargement of the spleen with greyish-white foci, and nodules in the liver, pancreas, pleura, lungs and myocardium. Diagnosis was confirmed by histological findings. The lymph nodes lost their normal structure and lymphatic tissue was replaced by atypical polymorphous cells which included large numbers of lymphocytes, eosinophiles and plasma cells and very few monocytes and neutrophile granulocytes; typical Sternberg cells and other giant cells were also present. Similar changes were noted in the spleen where anaplasia was more marked and normal lymphatic tissue was infiltrated by a preponderance of atypical cells. Giant cells and histiocytes were seen in trabecular vessels where large numbers of Sternberg cells with hyperchromatic nuclei in conjunction with infiltrating elements predominated while fibrous changes were absent.

—T.E.G.R.

ANON. (1956). **Alkaloids of *Senecio jacobaea* Linn. and carcinogenesis.**—*Brit. Emp. Cancer Campaign. 33rd Ann. Rep.* 1955. p. 4. **831**

A number of primary liver tumours, most of which were benign, were produced in fowls dosed with seneciphylline or fed the dried plant in their diet. A number of surviving birds are being kept under observation, and a proportion of them are receiving oestrogen, as it is thought that by raising the oestrogen level the damaged and probably pre-neoplastic liver may be "triggered off" into active neoplasia.

—E. COTCHIN.

HARRIS, R. J. C. (1956). **Acquired tolerance in turkeys to the Rous sarcoma agent.**—*Brit. Emp. Cancer Campaign. 33rd Ann. Rep.*, 1955. pp. 65-67. **832**

While the Rous agent produces typical myxomatous sarcoma at the site of inoculation in turkeys less than a week old, older turkeys are resistant. Tolerance to Rous agent is conferred by intravenous inoculation of fowl blood into embryonic or newly-hatched turkeys, and birds so treated may readily be infected at 6–8 weeks of age. The factors responsible for conferring tolerance were found to reside in the formed elements of the blood. The tumours arising in the turkeys, which were true turkey tumours, were transferable into young turkeys by virus inoculation and by cell grafts: one tumour transferred in this way gradually lost its infectivity for the chick and for the chorioallantoic membrane of the hen's egg.—E. COTCHIN.

ANON. (1956). **The leucosis complex and fowl paralysis.**—*Brit. Emp. Cancer Campaign. 33rd Ann. Rep.*, 1955. pp. 2-3. **833**

By histological examination of material from a routine diagnosis laboratory, certain clear-cut histological differences were found between the tumours of lymphoid leucosis and the tumour-like visceral growths seen in certain cases of fowl paralysis (neurolymphomatosis). Although such visceral lesions of neurolymphomatosis do, on occasion, become truly neoplastic, they differ from the tumours of fowl leucosis in that the latter are neoplastic from the outset. Experiments indicated that fowl paralysis was not transmitted by inoculation of blood, nerve emulsion, or bone marrow, and the visceral tumours of fowl paralysis were not transplantable in young birds nor on the clorioallantoic membrane of eggs. "A spontaneous myelocytoma produced a single case of erythromyeloblastic leucosis following inoculation into 4 six-week-old chickens, thus confirming the idea that myelocytoma corresponds to a discrete form of myeloid leucosis and that erythro and myeloid leucosis have a common viral aetiology."—E. COTCHIN.

ANON. (1956). **Environment and cancer incidence.**—*Brit. Emp. Cancer Campaign. 33rd Ann. Rep.*, 1955. pp. 1-2. **834**

Of 19 experimental birds that had been maintained from hatching in the invariable environment of a climatic chamber with constant temperature and humidity, with 12 hours of artificial light daily, 13 were found, 3½–4 years after the start of the experiment, to have cancer. No cancer was found in 17 sister hens exposed (apart from additional winter lighting) to the normal changes of climate. In the constant environment, the average period of sexual inactivity was 1½ months, against 8 months for the control birds.—E. COTCHIN.

BURMESTER, B. R., WALTER, W. G. & FONTES, A. K. (1956). **Studies of procedures for the immunization of chickens to visceral lympho-**

matosis.—*Poult. Sci.* **35**, 1135. **835**

The chicks of hens that had been immunized with live or killed visceral lymphomatosis virus were highly resistant to experimental infection. Chicks hatched from these hens before they were immunized were susceptible.—M.G.G.

See also abst. 886 (carcinogenesis and radiation injury).

NUTRITIONAL AND METABOLIC DISORDERS

USUELLI, F. (1956). Conceptions modernes de la digestion et du métabolisme des ruminants. **[Modern concepts of rumen digestion and metabolism.]**—*Proc. 7th Internat. Congr. Zootech., Madrid.* Part 6. pp. 107-114. [In French. English, German and Spanish summaries.] **836**

A review of Italian work on this subject.
—R.M.

I. LODGE, J. R., MILES, J. T., JACOBSON, N. L. & QUINN, L. Y. (1956). **Influence of chlortetracycline on *in vitro* cellulose digestion by bovine rumen microorganisms.**—*J. Dairy Sci.* **39**, 303-311. **837**

II. BARTLEY, E. E., PARRISH, D. B. & WHEATCROFT, K. L. (1956). **Antibiotics in dairy cattle nutrition. VI. The effects of aureomycin feeding on the apparent digestibility of certain calf rations.**—*Ibid.* 319-325. **838**

I. Rumen inocula from lactating cows and 4-month-old calves, fed aureomycin daily, digested in the artificial rumen a lower percentage of cellulose than similar inocula from control cows and calves. The addition of aureomycin to the fermentation mixtures in the artificial rumen severely inhibited cellulose digestion by the micro-organisms of the control, but not of the aureomycin fed cows. Plate counts of the various micro-organisms in the rumen inocula from the aureomycin fed and control cows revealed no major differences, but strains of *Pseudomonas* and *Monilia* that had the ability to inactivate aureomycin, were found in the inocula of the aureomycin fed cows. This may explain the lack of differences between the aureomycin fed and control cows in weight gains, milk productfiion, and efficiency of feed utilization.

II. In calves fed milk only, the administration of aureomycin, 25 mg. per 100 lb. body wt., very slightly improved the digestibility of the various nutrients. In 13-week-old calves fed milk and oats, and in 9-week-old calves fed milk and lucerne hay, aureomycin markedly reduced the digestibility of crude fibre, but in 13-week-old calves fed milk and lucerne hay, it had no effect on the digestibility of any of the nutrients. The beneficial effects of aureomycin on growth and feed efficiency would appear not to be due to improvement in the digestibility of feeds.
—A. ACKROYD.

REID, J. T. (1956). **Nutrition and feeding of dairy cattle.**—*J. Dairy Sci.* **39**, 735-763. **839**

During the past 50 years, developments in the science of selection and husbandry of dairy cattle have resulted in the average cow in the U.S.A. now producing annually more than 5,000 lb. of milk compared with 2,500 lb. in 1906. In this review (published without a list of references), after sketching the quite extensive body of knowledge on the nutrition of dairy cattle that had accumulated by 1906, R. outlined the more significant developments that have taken place since. These include the discovery of the vitamins, of the essentiality of magnesium, iron, copper and cobalt and functions of other mineral elements, and of the toxic effects of some substances occurring naturally in feeding stuffs. Knowledge of the use of dietary energy has been greatly increased, whilst that on ruminal digestion and sythesis has been developed and used to determine the nutrient requirements of cattle for various body functions. The nutritive qualities of feeding stuffs and factors affecting these have been described more completely. From all this information, feeding standards and, therefore, practical rationing of dairy cattle, have been formulated.—A. ACKROYD.

HARDISON, W. A., LINKOUS, W. N., ENGEL, R. W., MOORE, W. E. C. & GRAF, G. C. (1956). **The effect of Fab and lecithin on the digestibility of an all-hay ration.**—*J. Dairy Sci.* **39**, 339. **840**

In heifers, the administration of the detergent "Fab" and of purified soya bean lecithin (both reported to be effective in preventing bloat in cattle) had little and no detrimental effect, respectively, on the dry matter digestibility of a lucerne, oats and hay ration.—A. ACKROYD.

GOODWIN, R. F. W. (1956). **The distribution of sugar between red cells and plasma: variations associated with age and species.**—*J. Physiol.* **134**, 88-101. [Author's summary modified.] **841**

The distribution of glucose between the

r.b.c. and plasma was studied in foetal, neonatal and adult blood from the horse, pig, ox, sheep, rabbit and g. pig. In the foal and piglet, the distribution of fructose was also studied.

The distribution of glucose often varied between species of adults and also within species at different ages. Seliwanoff-positive material (taken as fructose) was at high concentration within the r.b.c., not only when the concentration of associated glucose was high (as in the foetal pig) but also when it was very low (as in the new-born foal). In general, new-born animals had a high conc. of glucose in the r.b.c.; this decreased during the neonatal period to the low levels characteristic of the adult. The new-born foal, however, has a very low corpuscular glucose concentration.

JAKOBSEN, P. E. (1956). **Protein requirements for fetus-formation in cattle.** — *Proc. 7th Internat. Congr. Zootech., Madrid.* Part 6. pp. 115-129. [In English. French, German and Spanish summaries.] **842**

J. determined the amounts of nitrogen and protein in the foetus, foetal fluids and membranes, and uterus of pregnant cows. From these data and from protein balance experiments the protein requirement of the cow was calculated to increase from 35 g. digestible pure protein daily during the sixth month of pregnancy to 250–300 g. during the last 14 days of pregnancy.—R.M.

BELEN'KI, N. G., KRUILOVA, N. N., CHERTKOV, I. L., ZUEVA, L. D. & SEVOST'YANOV, B. A. (1956). **[Distribution of radioactive methionine in proteins of organs and tissues of cattle and rabbits.]**—*Proc. Lenin Acad. agric. Sci.* **21,** No. 8. pp. 3-6. [In Russian] **843**

An ox and 5 rabbits were given 3 i/v injections, at 4-hourly intervals, of methionine labelled with radioactive sulphur. After 24 hours 10% of the dose injected was incorporated in tissue proteins, mainly in muscle, blood and liver. The mode of incorporation was similar in both species. Tables give the radioactivity of the various organs.—R.M.

BROUWER, E. (1956). **Mineral interrelationships in pasture for dairy cattle.** — *Proc. 7th Internat. Congr. Zootech., Madrid.* Part 6. pp. 93-106. [In English. French, German and Spanish summaries.] **844**

B. described graphical methods for expressing the interrelationships between Ca, Mg, Na and K in a given pasture. He discussed differences between "normal" grass and that responsible for hypomagnesaemia and haemoglobinuria in cattle.—R.M.

COMAR, C. L. & WASSERMAN, R. H. (1956). **Radioisotopes in the study of mineral metabolism.** In "Progress in Nuclear Energy Series VI. Biological Sciences". pp. 153-196. [London: Pergamon Press Ltd.] [Authors' abst. modified.] **845**

Certain aspects of skeletal physiology and the metabolism of calcium, strontium, and iodine are reviewed (85 references), with emphasis on recent developments arising primarily from the use of radioisotopes. The subject matter is discussed and integrated from two viewpoints: the fundamental physiological and nutritional problems arising from the potential health hazards of the fission products. It appears that we now have a reasonable understanding of what happens under varying conditions to these radioisotopes after they enter the body. Also, it is possible to estimate the retention by man and the amount which will be present in the meat, milk etc., of an animal when the dietary intake is known.

KLEIBER, M. & LUICK, J. R. (1956). **Calcium and phosphorus transfer in intact dairy cows.** *Ann. N.Y. Acad. Sci.* **64,** 299-313. [Abst. from authors' conclusions.] **846**

The milk of a high-yielding dairy cow may contain daily 43 g. of calcium and 37 g. of phosphorus. I/v injection of P^{32} as a tracer indicated that most of the P in milk, even of the P in the serine phosphate of the casein, comes from the acid-soluble P in the blood plasma. Injection of P^{32} into the cistern of one quarter of the udder revealed that much of the utilization of inorganic P for casein synthesis occurs in the udder. After i/v inj. of Ca^{45} and of P^{32} into cows producing 53–66 kg. of milk in 7 days, 35% of the injected Ca^{45} and 22% of the injected P^{32} appeared in the milk. Specific activity of the tracer was considerably higher in the milk than in the blood plasma. As regards P, the most likely explanation of this at present is that by Saarinen *et al* (1950) [*J. Dairy Sci.* **33,** 878], who suggested that only a fraction of phosphates determined as plasma inorganic phosphates serves as the main precursor of P in milk.

CHRISTENSEN, N. O. (1956). Fortsatte undersøgelser over parenteral jernterapi til pattegrise. **[Further trials with parenteral iron therapy in piglets.]**—*Medlemsbl. danske Dyrlaegeforen.* **39,** 541-549. [In Danish.] **847**

C. reported further clinical trials [see also *V.B.* **27,** 207] in 45 anaemic piglets upwards of 10 days old. It was confirmed that a single i/m inj. of 100 mg. Fe (using the iron-dextran

compound "Idozan") was safe and effective. Even where an optimal oral intake of Fe was provided for (turf sprinkled with an iron and copper sulphate mixture), the haemoglobin curves of the treated piglets were better than those of controls. Provision for oral intake of Fe as early as possible is the most economical prophylactic measure, and the main indication for parenteral therapy is in cases of marked anaemia with debility and diarrhoea. C. discussed the biochemistry of iron metabolism and the special requirement of the young pig.
—F.E.W.

DENTON, D. A. & MCDONALD, I. R. (1956). **The effect of a rapid change of Na^+ balance on the Na^+/K^+ ratio of the parotid saliva of Na^+-depleted sheep.**—*J. Physiol.* **133**, No. 3. pp. 37P-38P of Proceedings. **848**

Experiments with sheep depleted of sodium showed that after the intracarotid infusion of NaCl a large increase in the Na/K ratio of the parotid saliva occurred only after some delay. It was concluded that a significant change in the Na balance influences the production of some hormonal agent which acts on the parotid gland.—J. A. NICHOLSON.

SMYTHE, R. H. (1956). **Hypomagnesaemia.**—*Vet. Rec.* **68**, 833. **849**

S. drew attention to a fairly constant clinical feature in hypomagnesaemia—the occurrence of oestrus within 48 hours before an attack.
—M.G.G.

SLINGER, S. J., SUMMERS, J. D. & PEPPER, W. F. (1956). **Effect of zinc on growth and foot dermatitis in turkeys.**—*Poult. Sci.* **35**, 1172-1173. **850**

The addition of 50 p.p.m. zinc to a diet already containing 58 p.p.m. zinc increased the weight of male turkey poults at 4 weeks of age while tending to depress the weight of females. Zinc had no effect on foot dermatitis.—M.G.G.

GEORGESCU, V., TAGA, L. & DRĂGHICI, D. (1956). Continutul normal in aluminiu la animale. **[Normal aluminium content of animal tissues.]**—*Anu. Inst. Pat. Igienc. anim.* **6**, pp. 211-214. [In Roumanian. French summary. p. 294.] **851**

In sheep (8–18 months old), pigs (5–6 months old) and fowls (18 months old), that had never been inoculated with products containing aluminium, the mean aluminium content (in mg.%) of the organs ranged, respectively, from 4·05-6·49, 1·11-2·11, and 0·54-0·96; respective values for the blood were 0·16-0·18, 0·16-0·20, and 0·18-0·27. In pigs the lymph nodes had a relatively high content, 1·31–2·33 mg.%. In each of the 3 species the highest values were found in the lungs: this agreed with the findings of Eveleth & Myers (1936) [*J. Biochem.* **113**, 1449]. The lowest values were in the kidneys and liver in sheep and fowls, and in the spleen and heart in pigs.—F.E.W.

REID, B. L., KURNICK, A. A., SVACHA, R. L. & COUCH, J. R. (1956). **Inorganic growth promoting substances—molybdenum.**—*Poult. Sci.* **35**, 1167. **852**

The addition of 0·0126 p.p.m. molybdenum to a purified diet increased the growth of depleted chicks by 10–18%.—M.G.G.

DOMAŃSKI, E., DOBROWOLSKA, D. & ZALEWSKA, E. (1956). Przemiana karotenów i witaminy a u krów cielnych i cieląt. **[Carotene and vitamin A metabolism in calves and pregnant cows.]**—*Roczn. Nauk rol.* Ser. E. **67**, 313-326. [In Polish. English and Russian summaries.] **853**

As a result of investigations it was concluded that a high yielding cow should receive a daily ration containing at least 400 mg. carotene in order to provide the foetus with sufficient vitamin A, and to produce milk with a sufficiently high content of that vitamin. Feeding experiments revealed that calves must be over 14 days old before they can convert carotene into vitamin A. Calves with vitamin A deficiency often died at the age of 2–4 days with symptoms of septicaemia caused by *Bact. coli*, cocci and other facultative pathogens. It was noted that the bacterial flora of the digestive tract multiplied more intensively in these animals than in normal calves of the same age.—M. GITTER.

GAŽO, M. & LANDAU, L. (1956). Dynamika vylučovania karoténov a vitamínu A mliekom u kráv v období zimnej hypovitaminóznej výživy a na začiatku zeleného kŕmenia. **[Excretion of carotenes and vitamin A in the milk of cows on winter diet and at beginning of the green fodder season.]** — *Vet. Čas.* **5**, 267-282. [In Slovak. German and Russian summaries.] **854**

A study on the formation of vitamin A and the amounts present in blood and milk of 143 cows, towards the end of the winter when on a vitamin-deficient diet, and during the first 20 days after the change-over to green fodder.
—E.G.

JAŚKOWSKI, L., WAŁKOWSKI, L., DOBROWOLSKA, D. & DOMAŃSKI, E. (1956). Badania nad niepłodnością czynnościową u bydła. I. Wpływ niedoboru witaminy A. **[Functional**

sterility in cattle. I. Vitamin A deficiency.] —*Roczn. Nauk rol.* Ser. E. **67,** 327-337. [In Polish. English and Russian summaries.] **855**

The authors investigated oestrous cycles in 5 heifers kept on a carotene deficient diet for 6½ months. The first disorders (irregular or prolonged oestrous cycles) appeared during the first 2 months on the deficient diet. Ovarian dysfunction (persistent corpus luteum and follicular atresia with a tendency to cyst formation) began several weeks later. The animals failed to conceive during the 6½ months, but one month after return to normal diet 2 of the heifers became pregnant. During the 4th month of the experiment an enlargement of the udder was noted in all animals. No general disorders were noted and the authors are of the opinion that vitamin A deficiency caused a hormonal disturbance in the anterior pituitary-ovarian endocrine system.

—M. Gitter.

Ames, S. R., Ludwig, M. I., Swanson, W. J. & Harris, P. L. (1956). **Effect of DPPD, methylene blue, BHT, and hydroquinone on reproductive process in the rat.**—*Proc. Soc. exp. Biol., N. Y.* **93,** 39-42. [Authors' summary and conclusions modified.] **856**

Vitamin E bio-assays (prevention of resorption-gestation) of both methylene blue and diphenyl-*p*-phenylenediamine (DPPD) indicated a low level of activity. However, this apparent tocopherol-like potency was due probably to a protective or sparing effect on small residual quantities of vitamin E in the diet and in the body tissues. When the diet was rigorously freed from tocopherol and the depletion period extended, methylene blue and DPPD were found by other investigators to be completely devoid of vitamin E activity.

At higher levels of supplementation, both methylene blue and DPPD were toxic. Methylene blue in doses of 100 mg. daily killed pregnant rats. Feeding pregnant rats diets containing 0·0125% DPPD resulted in mortality of their young. Higher levels of DPPD prolonged gestation and killed the mothers. Neither butylated hydroxytoluene (0·313%) nor hydroquinone (0·3%) produced these symptoms of toxicity, but the former at 1·55% of the diet resulted in drastic loss of weight and foetal deaths.

Draper, H. H. & Johnson, B. C. (1956). **N,N¹-diphenyl-p-phenylenediamine in the prevention of vitamin E deficiency in the lamb.**—*J. Anim. Sci.* **15,** 1154-1157. [Abst. from authors' summary.] **857**

In new-born lambs maintained for 7 weeks on an artificial milk diet containing tocopherol-free lard as a source of fat, diphenyl-*p*-phenylenediamine administered at a level equivalent to 0·1% of the dry matter content of the diet completely prevented the appearance of vitamin E deficiency (checked by histological examination of skeletal and cardiac muscle); at 0·025% it was not quite adequate and 0·001% was ineffective.

Scott, M. L., Nelson, T. S. & Butters, H. E. (1956). **Evidence that exudative diathesis and encephalomalacia differ etiologically.** — *Poult. Sci.* **35,** 1169-1170. **858**

Both exudative diathesis and encephalomalacia appeared in baby chicks reared on a purified diet nutritionally adequate except for vitamin E. Supplementing the diet with 20 mg. of vitamin E per lb. or 10% dried brewer's yeast prevented the exudative diathesis but not the encephalomalacia. The addition of the antioxidant diphenyl-*p*-phenylenediamine had the opposite effect. When vitamin E-free lard was omitted from the diet, vitamin E prevented both syndromes, whereas the antioxidant had no effect. The authors interpreted these paradoxical results by suggesting that the occurrence of encephalomalacia in chicks fed a fat-free diet may have been due to active rancidity of body fats in the absence of vitamin E. Failure of the antitoxidant to prevent this may have been due to its non-absorption from the fat-free diet. They concluded that in chicks exudative diathesis may be a more specific symptom of vitamin E deficiency than encephalomalacia. [See also *V.B.* **25,** 4118.]—L. M. Markson.

Afonsky, D. (1955). **Oral lesions in niacin, riboflavin, pyridoxine, folic acid, and pantothenic acid deficiencies in adult dogs.**—*Oral Surg.* **8,** 206-212, 315-318, 438-440, 543-545, 656-658, 769-773 & 867-876. **859**

A detailed account of the histopathology of glossitis and gingival and periodontal lesions caused by deficiency of each of these vitamins in the dog. After a preliminary cleaning of the gums and teeth, brushing the teeth daily prevented the development of gingivitis in healthy dogs and most of the vitamin-deficient dogs.

—R.M.

Flux, D. S., Butler, G. W., Johnson, J. M., Glenday, A. C. & Petersen, G. B. (1956). **Goitrogenic effect of white clover** (*Trifolium repens L.*)—*N. Z. J. Sci. Tech. Sect. A.* **38,** 88-102. **860**

The detoxication of cyanogenetic glucosides with the production of thiocyanate is usually

sufficiently rapid to prevent cyanide poisoning. However, thiocyanate is known to be goitrogenic since it inhibits the accumulation of iodine by the thyroid gland. Experiments were therefore carried out with rats, g. pigs and sheep, to determine whether the cyanogenetic glucosides in certified white clover could produce a goitrogenic effect. It was concluded that a goitrogenic factor was present in cyanogenetic white clover and that after feeding such clover serum thiocyanate rose sufficiently to depress the activity of the thyroid gland.—J. A. NICHOLSON.

PELTOLA, P. & VARTIAINEN, A. (1954). **Effect of the prophylactic use of iodine on the thyroid of cattle in the endemic goitre district in Finland.**—*Ann. Med. intern. Fenn.* **43,** 209-215. **861**

In a district where goitre was endemic, it had been the practice for the past 30 years to add iodine to the food of cattle at the rate of approx. 1,500 μg. to each animal daily. Despite this treatment the weight of the thyroid glands was 60–90% higher, and the iodine conc. 30–40% lower, than in the thyroids of cattle in non-goitrous districts.—R.M.

LEWIS, R. C. (1956). **The effect of thyroidectomy and iodine supplementation on the plasma PBI of a Jersey bull.**—*J. Dairy Sci.* **39,** 610-611. **862**

In a Jersey bull in which the thyroid gland was inactivated at 8 months of age by s/c inj. of carrier-free I^{131}, the protein bound iodine (PBI) plasma level dropped from 6·7 μg.% to 0·8 μg.% within 33 days and remained at this level. The oral administration of 1 g. of cuprous iodide daily for 6 days caused a rise in the PBI to 25·5 μg.% by the last day of treatment and the level was still 8·4 μg.% 73 days later. The plasma PBI of dairy cattle receiving supplementary iodine will probably contain a non-thyroidal iodine fraction.—A. ACKROYD.

BODA, J. M. & COLE, H. H. (1956). **Studies on parturient paresis in cattle.**—*Ann. N.Y. Acad. Sci.* **64,** 370-374. [Abst. from authors' conclusion.] **863**

Data are given indicating that feeding a low-calcium, high-phosphorus diet before parturition reduces the incidence of milk fever in dairy cattle. It is considered that such diets exert this effect by activating the parathyroid glands. [See also *V.B.* **24,** 2867.]

BODA, J. M. & COLE, H. H. (1956). **Calcium metabolism with special reference to parturient paresis (milk fever) in dairy cattle : a review.**—*J. Dairy Sci.* **39,** 1027-1054. **864**

After a general survey of the information available on calcium metabolism in animals, the recent work bearing directly on milk fever is reviewed. This condition occurring principally in aged high-yielding cows with possibly a negative calcium balance before parturition, appears to result from a failure of the normal homoeostatic mechanisms, principally the parathyroid glands, to maintain a normal level of blood calcium at the initiation of lactation. Successful preventive measures are massive dosage with vitamin D_2, 30 million units daily, for 4–5 but not longer than 7 days, and feeding a low calcium high phosphorus diet before parturition. —A. ACKROYD.

WARD, G. M. (1956). **Calcium balances and changes of some blood and urinary constituents as related to parturient paresis in dairy cows.**—*Ann. N.Y. Acad. Sci.* **64,** 361-369. [Author's summary modified.] **865**

This study concerns the average blood and urinary levels of Na, K, and chlorides during 16 parturitions in 14 cattle from 30 days prepartum to 30 days postpartum. Three of the parturitions were followed by attacks of parturient paresis. The total intake and excretion during this period of Na, K, and Ca is given. The blood levels of Ca, Na, K, chlorides, pyruvic, lactic and citric acids, and haematocrits are given for 11 cows, of which 8 had milk fever and 3 calved normally. The trend for average blood values near parturition was increased chlorides and K, and lower Na. Differences between cows with milk fever and normal cows were not marked in this respect. Pyruvic and lactic acid levels were higher, citric acid was lower, and haematocrits higher in cows with milk-fever before treatment than after. Urinary excretion of all minerals decreased at parturition. K and chloride excretion decreased more sharply in the cows with milk-fever; these animals also had severe negative Ca and K balances before parturition.

SHAW, J. C. (1956). **Ketosis in dairy cattle. A review.** — *J. Dairy Sci.* **39,** 402-434. (143 refs.) **866**

The more recent findings in the field of bovine ketosis are reviewed. This primary metabolic disorder is of common occurrence postpartum in all areas of the world. It has been shown not to be due to a lowered feed intake, a simple hypoglycaemia or the inability to utilize glucose, and has never been produced experimentally by nutritional means. Faulty gluconeogenesis from protein and fat may be one of the major aetiological factors since, in the

cow, little glucose is absorbed directly from the digestive tract and other exogenous sources of glucose are inadequate to meet the requirements of the mammary gland. In its treatment, intravenous glucose, glucose precursors and glucose sparing substances have all been tried, with varying success, but recently the oral administration of soluble lactates, by making both lactic and propionic acid available as glucose precursors over an appreciable period of time, would seem to offer more promise. Flabbiness, hypertrophy and histopathological changes have been observed in the adrenal glands of ketotic cows and the glucocorticoids and adrenocorticotrophic hormone are all, in varying degrees, effective in the treatment of primary ketosis. This has led to the theory that the condition may be a pituitary-adrenocortical disturbance, but recent observations that plasma glucocorticoid levels are high and the protein bound iodine levels low in ketotic cows would suggest that some of the theories on the cause of the apparent adrenal insufficiency may need to be modified.—A. Ackroyd.

Reber, E. F., Bain, L. R., Hatch, R. D., Schoettle, C. E. & Sampson, J. (1956). **The use of 11-ketoprogesterone in the treatment of hypoglycemia and ketonemia in the ruminant.**—*Vet. Med.* **51,** 290-292. **867**

Of 5 clinical cases of bovine ketosis only 2 responded to the s/c or i/m injection of 11-ketoprogesterone. The most effective treatment in the 3 other cases was the i/v administration of glucose.—M.G.G.

See also absts. **920** (nutritional state and heat tolerance in cattle); **965** (report, Mukteswar Institute); **970** (book, animal nutrition).

DISEASES, GENERAL

Leonard, B. J., Israëls, M. C. G. & Wilkinson, J. F. (1956). **Treatment of Hodgkin's granuloma, chronic lymphatic leukaemia, polycythaemia vera, and other reticuloses with triethylenethiophosphoramide.**—*Lancet.* **271,** 1017-1021. [Authors' summary modified.] **868**

54 patients with various diseases of the haemopoietic and reticulo-endothelial systems were treated with a nitrogen-mustard preparation, triethylenethiophosphoramide, suitable for i/m injection. The drug produced clinical and haematological remissions in polycythaemia vera for periods of up to 14 months; and, when further treatment was needed, further remissions were produced. It was also effective in some cases of Hodgkin's granuloma, lymphoid reticulosis, and follicular lymphoreticulosis where the disease was detectable mainly in peripheral lymph nodes, but it was less effective when the mediastinal lymph nodes, liver, and spleen were involved. The drug was shown to be capable of diminishing the lymph node masses, liver, spleen, and white-cell count in chronic lymphatic leucaemia. It should not be given when the platelet-count is low.

Domán, I. (1956). Tömegesen jelentkező gyomor-bélhurutos megbetegedések lovak között. **[An outbreak of an unidentified transmissible gastro-enteritis in horses.]** — *Mag. állator. Lapja.* **11,** 175-178. [In Hungarian. English and Russian summaries. Abst. from English summary.] **869**

The symptoms were fever and gastro-enteritis in horses of all ages; the mortality rate was very low and usually recovery was spontaneous. Although the disease could be produced experimentally [method not stated in summary], attempts to isolate an infective agent were unsuccessful. Recovered animals appeared to be immune.

Fromentin, G. (1956). Considérations sur la fourbure des equidés. Essai de traitement par le 4560 R.P. **[Treatment of laminitis in horses with chlorpromazine.]** — *Rev. Méd. vét.* **107,** 507-512. **870**

As massive and continuous dosage with synthetic antihistamine drugs in conjunction with "classical" therapeutic measures gave disappointing results, it was decided to use "Lomidine" (pentamidine isethionate) and chlorpromazine in conjunction with these measures. In one case, affected for 14 days, "Lomidine" was ineffective. Of 2 cases given chlorpromazine, one, treated from the appearance of symptoms, was cured in 36 hours after a total dosage of 950 mg.; the other, affected for 4 weeks, recovered after a total dosage of 3,300 mg. over 12 days, and there were no symptoms of intolerence to the drug. Chlorpromazine was equally effective when given in an intravenous perfusion. Synergic activity nas noted when promethazine was given with chlorpromazine.

—F.E.W.

Faluhelyi, G. (1956). Lovak kólikás tünetekkel járó emésztőszervi betegségeinek újszerű kezelése. **[Treatment of colic in**

horses.]—*Mag. állator. Lapja.* **11,** 294-297. [In Hungarian. English and Russian summaries. Abst. from English summary.] **871**

Phenobarbitone sodium in doses of 1·5–18 g. in 10–20% soln. was administered i/v or i/m in 148 cases of colic in horses. Symptoms subsided immediately and this treatment was considered satisfactory in cases of simple meteorism. Subsequent administration of neuromuscular purgatives could be carried out without danger of recurrence of symptoms.

WILLIAMS, E. I. (1956). **Further observations on traumatic reticulitis and bloat in cattle.**—*Vet. Rec.* **68,** 835-839. [Author's summary copied *verbatim*.] **872**

Further observations are recorded on traumatic reticulitis, and bloat, in cattle, as encountered in practice. The clinical interpretation of the two types of ruminal movements and its importance in the diagnosis of traumatic reticulitis is emphasised. An analysis of 97 cases of traumatic reticulitis revealed that they fall into two clinical groups. The diagnostic value of the "reticular grunt" test has been proved in a further series of cases. A classification of bloat into two clinical types is given with reference to some of its features in practice. Some of the most likely causes of bloat are reviewed, together with the sequence of events in eructation. The need for further knowledge of normal forestomach physiology in adult cattle is stressed.

RENK, W. (1956). Pathologie der Milchsekretions- und Abflussstörungen bei 1-, 2- und 3 strichigen Kühen. **[Mammary pathology in cows with 1, 2 or 3 quarters.]**—*Zbl. VetMed.* **3,** 131-148. [English, French and Spanish summaries.] **873**

Of 80 cows with various udder affections 22 had one or more damaged quarters. About half of the cows were 8–15 years old. In 20 quarters of 16 cows cessation of lactation was caused by blockage of the sinus, resulting from proliferative inflammation which in some cases was accompanied by epithelial metaplasia. In 7 quarters lesions were associated with *Corynebact. pyogenes* mastitis, in the remainder with non-specific inflammations, traumatic injury and streptococcal mastitis. Lesions are described in detail and there are 15 illustrations giving their gross appearance and histopathology.—E.G.

SCHEIDY, S. F., HENRY, R. T., JR. & BLACKBURN, E. G. (1956). **Muzzle disease.—A new clinical entity in eastern Pennsylvania.**—*N. Amer. Vet.* **37,** 645-649. **874**

A disease of unknown aetiology was observed in 12 herds of cattle and in a small group of goats not associated with cattle. Only a few animals in any herd were affected. In one herd, however, 20 out of 50 animals manifested symptoms within a period of about 3 weeks. The condition was characterized by erosion of the epithelium of the muzzle and nostrils, dental pad, gums (in the incisor area), dorsal surface of the tongue, teats, scrotum, lips of the vulva, and coronary band. There were systemic disturbances, reduction in milk yield, lameness and, in fatal cases, diarrhoea during the last 2 days before death. The breath had an offensive odour and there was a nasal discharge when the nostrils were involved. [Mortality rate not stated.]—T.E.G.R.

ROONEY, J. R., JR., WATSON, D. F. & HOAG, W. G. (1956). **Abomasal ulceration and perforation. Report of two cases.**—*N. Amer. Vet.* **37,** 750-752. **875**

P.M. examination of a 9-month-old heifer, revealed numerous petechial haemorrhages in the fundus of the abomasum and ragged haemorrhagic necrotic ulcers in the pylorus. One of these had perforated the wall, opening into an abscess, 5 to 6 cm. in diam., with fibrous adhesions to the parietal peritoneum, omentum and duodenum. The second case was a 12-week-old heifer which suddenly developed anorexia, shallow respiration, tenderness over the abdomen and a temperature of 99°F. P.M. examination revealed 4 ulcerations, 0·5 to 1 cm. in diam., along the pyloric portion of the abomasum; 3 were irregular with haemorrhagic borders and yellowish necrotic centres. The fourth ulcer had perforated, forming a hole 1 cm. in diam.; the margins of the perforation were intensely haemorrhagic and there was no puckering of mucosa or serosa. In neither case could a cause be established.—E.V.L.

MOLL, T. (1956). **Massive adrenal hemorrhage in young calves. A report of seven cases.**—*J. Amer. vet. med. Ass.* **129,** 401-404. [Author's summary modified.] **876**

Seven cases of fulminating illness and death of young calves are reported. More or less severe adrenal cortical haemorrhage was found at P.M. examination. The condition resembled the "Waterhouse-Friderichsen syndrome" in man. M. discussed the aetiology.

I. CERETTO, F. (1955). Sull'origine dell' eosinofilia locale nelle lesioni a macchie verdi del vitello. **[The origin of the eosinophile cells in the green spots often seen on the organs of slaughter calves.]**—*Ann. Fac. Med. vet. Torino.* **5,** pp. 131-144. [French and German summaries.] **877**

II. CERETTO, F. (1955). Osservazioni sulle lesioni "a macchie verdi" dei bovini. **[Green spots in slaughter cattle.]** — *Ibid.* pp. 155-171. [English and French summaries.] **878**

I. The infiltrating elements in the lesions in the various organs are almost exclusively eosinophilic polymorphonuclear leucocytes; metamyelocytes are rarely encountered. In lymph nodes, besides the typical eosinophilic granulocytes, immature elements in various stages of development, going back to eosinophilic promyelocytes, are also present. The various stages of karyokinesis observed among immature cells indicate that tissue is homoplastic as well as heteroplastic in origin.

II. The condition, observed in slaughter cattle, occurs mainly in young animals (about a year old) but may also affect adults and young calves. The lesions are of an inflammatory nature and start as minute red spots which later become greenish red, and eventually, green. They are found in the lungs, liver, kidneys, intestines and associated lymph nodes. The portal and mesenteric lymph nodes are usually enlarged, juicy on section and of a greenish colour. Punctiform haemorrhages are often seen on the external surface of the portal and mesenteric nodes. Histologically the lesions consist of inflammatory areas with eosinophilic infiltration. In spite of the absence of any direct evidence it is considered that migration of nematode larvae may be the primary cause.

—T.E.G.R.

CAPARÓ, A. C., COPAIRA, M. & DE LA VEGA, E. (1955). Mal de montaña crónico en vacunos. **[Chronic mountain sickness in cattle.]**—*An. Fac. Med. Lima.* **38,** 222-231. [English summary.] **879**

An account of mountain sickness ("brisket disease") in 3 Swiss Brown calves born in Peru at 4,000 metres above sea level, and in an imported Holstein cow kept at 3,500 metres.

—R.M.

GALLÓ, F. (1956). ACTH-val szerzett tapasztalatok a sertések tüdővizenyojének gyógykezelésében. **[A.C.T.H. in treatment of lung oedema of pigs.]**—*Mag. állator. Lapja.* **11,** 292-294. [In Hungarian. English and Russian summaries. Abst. from English summary.] **880**

Adrenocorticotrophic hormone (30 i.u./100 kg. body wt.) elicited a quick response in all except 0·9% of pigs treated. Recovery was slow in 66% of untreated animals.

FLORIO, R., FLACHAT, C., COTTEREAU, P., FLOCHON, G., FEDIDA, M. & SAINT-CYR, R. (1956). Sur la "maladie des tremblements" du porcelet. **[Trembling in young pigs.]**—*Rev. Méd. vét.* **107,** 209-219. **881**

An account of the clinical and pathological aspects of the disease. The authors suggested that the conditions may be a form of hyperthyroidism; they gave details of an attempt to treat affected pigs with a synthetic anti-thyroid drug.—M. B. HAWKSLEY.

HUPKA, E. & HORN, M. (1956). Beitrag zur Ätiologie des Zitterkrampfes der Saugferkel. **[Aetiology of trembles in piglets.]** — *Dtsch. tierärztl. Wschr.* **63,** 422-425. **882**

Fourteen out of 23 litters sired by a certain boar had trembles. Litters born to the same sows by other boars were normal. It is considered that the condition may be due to a recessive gene.—M.G.G.

NIELSEN, J. M. (1956). **Urolithiasis in mink: pathology, bacteriology and experimental production.**—*J. Urol.* **75,** 602-614. **883**

Urolithiasis is common in mink in captivity and is often endemic, causing heavy losses. It is rarely diagnosed during life. The losses tend to occur, in the U.S.A., in breeding females during gestation or lactation in April to June, and in young males in the late summer and autumn. It is rare in young females and adult males. The stones are chiefly of magnesium ammonium phosphate.

In a survey of captive mink, of which 184 were healthy and killed for pelting and 4 had died from disease other than urolithiasis, plaques in the kidneys were confirmed microscopically in 43. Calcification of the renal papilla in affected mink occurred in the connective tissue and basement membrane of the capillaries and tubules. Renal calcification was not the dominating lesion in lithiasis. In adult females urolithiasis is frequently associated with chronic cystitis and pyelonephritis; in affected young males acute haemorrhagic cystitis and pyelonephritis were always present and small calculi together with exudate had caused obstruction of the urethra. In most cases foci of Gram-positive cocci were present in the purulent exudate and necrotic tissue.

A bacteriological survey of 84 healthy mink indicated that the urinary tract was free from bacteria. Of 47 mink with calculi, haemolyltic micrococci were present in 18, non-haemolytic cocci in 15, *Proteus* organisms in 10, and coliform bacilli in 6.

Using a haemolytic, coagulase-positive and

urea-splitting strain of *Micrococcus pyogenes* var *albus* from pooled culture from 8 mink with urolithiasis, N. introduced suspension into mink as follows:—of 14 in which a ureter was ligated, the ligature released and suspension injected into the same ureter, calculi developed in 3; all of 14 controls, similarly treated but with sterile saline instead of the suspension, remained healthy; of 21 injected with suspension without previous ligation of the ureter 9 developed calculi; of 15 in which the suspension was introduced into the bladder, 7 developed calculi.

N. inferred that most cases of urolithiasis in farm mink originate in infection of the urinary tract, chiefly with urea-decomposing haemolytic strains of *M. pyogenes* var. *albus*.—W.A.P.

HEIJKENSKJÖLD, F. & MÖLLERBERG, H. (1956). **The presence of amino acids in urinary calculi.**—*Scand. J. clin. Lab. Invest.* **8**, 230-233. [In English. Authors' summary slightly modified.] **884**

Paper chromatography for amino-acid determination and qualitative inorganic chemical analysis were used on 13 urinary calculi. About ten amino-acids in different combinations were demonstrated. The correlation between amino-acids and inorganic constituents was briefly discussed.

DYCE, K. M. & HAWKINS, A. E. (1956). **The avoidance of X-ray injury.** — *Brit. vet. J.* **112,** 475-482. **885**

Injury from X-rays can be prevented by the following measures: the use of cones or disphragms to reduce the field of the beam, refusal to carry out unnecessary examinations, avoidance of duplicated work by care in positioning and bilateral exposure of the animal, avoidance of the use of grids and slow film unless these are absolutely necessary, and insertion of an aluminium filter near the source of radiation. Hazards to assistants can be reduced by the wearing of protective clothing and the administration of sedatives to animals. Considerable use has been made of a lead-covered box containing an X-ray tube which is placed over the animal. The animal is held in position by its head and limbs which project through openings at each end of the box. Fluoroscopy is a hazardous technique and should be abandoned where it is used as a substitute for radiography. The operator should undergo regular blood tests and wear a sensitive film recording the degree of exposure.—M.G.G.

BRUES, A. M. (1956). **Modes of radiation injury; bone and carcinogenesis; and sterility and foetal damage.** In "Progress in Nuclear Energy Series VI. Biological Sciences." pp. 1-12. [London: Pergamon Press Ltd.] [Author's abst. modified.] **886**

Modes of radiation injury: Many of the manifestations of the acute radiation syndrome are attributable to injury of the self-replenishing tissues. The haematopoietic sytem is especially important. Delayed effects range from the shortening of the life span to the development of specific changes, notably neoplasms. Chromosomal injury to developing germ cells may give rise to genetic alterations in succeeding generations.

Carcinogenesis and metabolism of bone-seeking isotopes: Tumour induction depends on the deposition of the radioactive material in a suitable tissue. Neoplasms may result from direct injury by radiation or indirectly through hormonal or other mechanisms. Bone tumours are associated with radioactive substances that have a metabolic similarity to calcium. Radium, mesothorium, and radiostrontium are especially important in man.

Effects on reproductive system and foetus: X-irradiation during life *in utero* may give rise to a high frequency of developmental abnormality. Spermatogenesis was disturbed in dogs given 10 times the industrial maximum permissible limits for over 3 years.

ANON. (1956). **Chemical protection against radiation.**—*Brit. med. J.* Sept. 15th. pp. 647-648. **887**

Skin creams or special clothing may give protection against radioactive "fall-out," which emits *a*- or slow β- particles giving a densely ionizing radiation with only small penetration. The main problem arises with X or γ rays which are highly penetrating but liberate relatively few ions per micron of tissue traversed. The LD_{50} dose, within 30 days, of whole-body radiation varies from 275r for pigs to 800r for rabbits; for man it is probably about 450r.

Several sulphydryl compounds injected immediately before radiation protect 20% to 90% of animals against LD_{100} dose of X-rays. They may give protection in at least 3 ways. First, they are strong reducing agents and may act by lowering the oxygen tension in the cell. Second, some enzymes which have active sulphydryl groups are inactivated by low doses of radiation and are protected by glutathione added before or after radiation. Third, cysteine may act by combining with vulnerable enzymes or desoxyribonucleic acid and blocking the access of the radiotoxins to the sensitive parts of the cell. In addition to the sulphydryl compounds, histamine, epinephrine and β-phenyl-

ethylamine in near toxic doses will protect mice against radiation.

Apart from chemicals which reduce the primary damage, agents are also being studied for hastening recovery or alleviating the pathological changes which follow damage. The predominant pathological response to whole-body irradiation is a temporary or permanent failure of cell replacement: thus treatment with antibiotics can be beneficial during the 2 to 10 days after irradiation when the body is defenceless against infection.

Chemical protection cannot be given against the genetic and carcinogenic hazards of exposure.—E.V.L.

WATERS, L. L. (1956). **Studies on the pathogenesis of vascular disease. The effect of intravenous egg-yolk emulsions on inflammatory lesions of the aorta and coronary arteries of dogs.**—*Yale J. Biol. Med.* **29,** 9-22. **888**

The author developed a technique for the rapid production of intimal lesions of the coronary arteries of dogs using allylamine and saline emulsions of egg yolk. Advantages claimed are, that dogs are not prone to spontaneous vascular disease, the procedure is simple, the lesions are present within a week or 10 days, the inflammatory focus in the artery wall as a result of the injection of allylamine is a basic acute reaction and its course can be followed, the egg yolk so injected is well tolerated by dogs and produces gross alterations in the quantities and physical form of lipids in the blood. The technique makes available for study segments of artery wall with increased permeability to plasma and to contained particulate lipids and soluble lipoproteins. It leads to intimal proliferation, phagocytosis of fatty substances from the blood and later to development of scars.

The selective localization of lipids in the artery walls at areas of injury emphasizes the dependence of this phenomenon on the presence of local increase in permeability. No lipid could be found in the coronary arteries in normal dogs.

The manner in which lipid from the blood can gain entrance to the artery wall in arteriosclerosis has been much discussed. In the experimental lesion, lipids appeared in the vessel wall first as diffusely stained sudanophile extracellular areas. Droplets or globules of more intensely staining material accumulated. Phagocytosis began within two days and progressed with the organization of the lesion. Large mononuclear cells in the exudate took up the lipid and later it was also present in new fibrocytes. Some mononuclear cells containing lipid appeared to wander out of the lesion; others were probably associated with the elaboration of collagen and became transformed into fixed tissue foam cells. Once maturity of the xanthoma was reached, disappearance of the phagocytosed lipid was progressive and rapid. Thrombi and myocardial infarcts associated with the lesions were rare.—W.A.P.

BRAUNSTEIN, H. (1956). **Needle biopsy of the liver in cirrhosis.**—*Arch. Path.* **62,** 87-95. **889**

To check the value of transcutaneous liver biopsy B. took 507 needle samples from 30 livers of human patients with cirrhosis after removal *post mortem*. Only 7 samples failed to reveal cirrhosis. In nutritional cirrhosis the accuracy of diagnosis was 100%. In post-hepatitic cirrhosis and in post-necrotic cirrhosis the accuracy was 96%. In many of the falsely negative samples some fibrosis was present. In the last two forms of cirrhosis there was considerable variation in the intensity of the fibrosis in any one liver and the needle biopsy method was not useful in appraising the severity of the disease. —W.A.P.

SOKOLOFF, L. (1956). **Natural history of degenerative joint disease in small laboratory animals. I. Pathologic anatomy of degenerative joint disease in mice.**—*Arch. Path.* **62,** 118-127. **890**

SOKOLOFF, L. & JAY, G. E., JR. (1956). **Natural history of degenerative joint disease in small laboratory animals. II. Epiphyseal maturation and osteoarthritis of the knee of mice of inbred strains. III. Variations in epiphyseal maturation in the head of the femur among inbred strains of mice. IV. Degenerative joint disease in the laboratory rat.**—*Ibid.* 129-135; 136-139 & 140-142. **891**

I. To throw light on degenerative joint disease in man the author examined the joints of mice and rats.

Such disease is common in the middle years of life and it becomes progressively more severe in the later decades. The integrity of articular cartilage appears to be related to its metabolic activity.

Osteoarthritis occurs widely in large mammals, but the author found that it is not common in rodents. In certain conditions it does occur in mice and is influenced profoundly by nutritional and hormonal factors. A systematic examination was made of 21 different joints of 670 mice aged 12 to 22 months. The earliest lesion was a localized disintegration of articular

cartilage, with areas in which there was splitting of the cartilage along its fibrillary planes followed by denudation of the cartilage from the underlying bone; then followed alterations in the contours of the articular surface, and proliferation of new bone and cartilage subjacent to the erosions. The disease in mice resembled that in man in its anatomical features, the localization of distribution according to postural characteristics and in its occurrence in the older age groups. The femoro-tibial joint was a common site and this was correlated with the habit of the mouse of supporting itself on its hind legs.

II. The authors made a histological examination of the femoro-tibial joints of 670 mice, 12 to 22 months old and belonging to 18 strains. A variable degree of closure of the distal epiphysis of the femur and proximal epiphysis of the tibia was found in the second year of life. Arthritis of the joint occurred in mice of the different strains at rates from 2 to 93%, indicating that genetic factors may operate. The incidence was higher in males than in females. The strain with the highest rate was prone to obesity.

III. Histological examination of the femur in 147 mice, 20–22 months old, revealed great variation in epiphyseal differentiation, ranging from complete absence of a secondary centre to complete ossification and closure.

IV. In a comparison with the results obtained with mice, the right femoro-tibial joint of 157 rats 20–30 months old and belonging to 8 inbred strains and one stock strain was examined histologically. Only 3 of the joints had lesions of osteo-arthritis.—W.A.P.

See also abst. **969** (text-book of clinical diagnosis)

POISONS AND POISONING

KWOK-KEW CHENG. (1956). **Experimental studies on the mechanism of the zonal distribution of beryllium liver necrosis.**—*J. Path. Bact.* **71**, 265-276. **892**

Microscopic observations of the transilluminated liver and histological and histochemical studies show that after the administration of beryllium sulphate, there is a gradual obliteration of liver sinusoids, and progressive damage of Kupffer cells. It is concluded that the salt localizes in the Kupffer cells near the afferent terminal vessels and diffuses later into adjacent parenchyma cells to produce liver necrosis.

—J. A. NICHOLSON.

HAMILTON, H. L. & KONING, A. L. (1956). **Effects of a phosphatase-inhibitor on the structure of the developing down feather.**—*Amer. J. Anat.* **99**, 53-79. [Abst. from authors' summary.] **893**

It is concluded that (a) beryllium inhibits morphogenesis by selective destruction of the mesenchyme, the known seat of embryonic organization; (b) this destruction is connected with the poisoning of alkaline phosphatase by substitution of beryllium for the normal metallic activator; (c) inactivation of phosphatase drastically curtails the synthesis of ribonucleic acid (RNA) in the epidermis, probably by cutting the supply of phosphate-complexes passing across the basement membrane; and (d) the shortage of RNA limits the synthesis of proteins and thus precludes further morphogenesis.

SCHEEL-THOMSEN, A. (1956). Dyr blyforgiftede af Udblaesning fra Motorkøretøjer. **[Poisoning of animals by exhaust from motor engines.]**—*Medlemsbl. danske Dyrlaegeforen.* **39**, 596-598. [In Danish.] **894**

Two dogs, each owned by a garage proprietor, developed a syndrome resembling that of chronic lead poisoning. The urine contained albumin; the blood was negative for leptospira. The only possible contact with lead was from exhaust fumes from motor vehicles using petrol to which lead tetraethyl had been added. Both dogs improved clinically after symptomatic treatment in hospital, but the symptoms recurred after their discharge. The condition responded to 5 injections of dimercaptopropanol and benzylbenzoate. A similar case was seen in a dog which habitually accompanied its owner in a motor car which was found to have a leak in the exhaust pipe.—F.E.W.

ELLIS, S. & KRAYER, O. (1955). **Properties of a toxin from the salivary gland of the shrew, *Blarina brevicauda*.**—*J. Pharmacol.* **114**, 127-137. **895**

The toxin present in the salivary gland of the shrew was stabilized and concentrated. The LD_{50} of purified toxin for mice and cats was 3·4 mg./kg. body wt. Rabbits were much more susceptible to the toxin. In anaesthetized animals the vascular action of the toxin appeared to be responsible for its lethal action: there was an initial fall in blood pressure probably due to peripheral vasodilation, followed by hypertension and tachycardia.—R.M.

OLAFSON, P. (1955). **Bovine hyperkeratosis in Israel and some problems in livestock produc-**

tion and animal health. — *Refuah vet.* **12**, 434. In Hebrew. [In English p. 446.] **896**

Outbreaks of bovine hyperkeratosis occurred in Israel after farmers had greased agricultural machinery with a lubricant containing 3% penta- and hexachloronaphthalene. Typical symptoms and P.M. lesions developed in 2 calves experimentally poisoned with the lubricant.

Schistosomiasis in a flock of sheep was traced to a contaminated pool. *Habronema* larvae were found in sores under the eyes of horses and mules. Paralysis of the throat in horses and mules, resembling "cornstalk" disease, was considered to be a form of malnutrition. Nematodes, probably *Setaria digitata*, were found in the spinal cord of a ewe with incoordination of the hind legs. A bluetongue-like disease was again observed in cattle.

—M.G.G.

DEDIÉ, K., PALLASKE, G. & MÜLLER, L. F. (1956). Intoxication des bovins par la naphtaline chlorée, en Allemagne centrale, en 1954-55. [**Poisoning of cattle in Germany by binder twine dressed with a chlorinated naphthalene grease.**]—*Bull. Off. int. Epiz.* **45**, 475-485. **897**

This is an account in French of an incident which occurred in Germany [*V.B.* **26**, 3604–3609].—T.E.G.R.

REUSS, U. (1956). Tierhygienische Erfahrungen mit neuzeitlichen Stallfussbodenplatten im Schweinestall. [**Floor slabs containing coal tar as the cause of toxic liver dystrophy and cirrhosis in pigs.**] — *Berl. Münch. tierärztl. Wschr.* **69**, 343-347. [English summary.] **898**

The clinical and P.M. findings in pigs kept on floors constructed from tar-containing slabs and cement were similar to those seen in natural cases. The condition was less marked in pigs kept on tar-containing slabs set in concrete. Control pigs on a floor consisting entirely of concrete remained healthy. The condition was not induced in cats and fowls by feeding or by contact with the tar-containing slabs and cement.—M.G.G.

FLEISCHER, R. & SCHULTE, F. (1956). Weiterer Beitrag über die gesundheitsschädliche Wirkung teerhaltiger Stallfussbodenplatten auf Jungschweine. [**Further observations on the harmful effect of tarred floor slabs on young pigs.**] — *Tierärztl. Umsch.* **11**, 250-252. **899**

Pigs fed pulverized floor slabs and cement containing coal tar developed symptoms and lesions similar to those observed in natural cases: toxic liver dystrophy and cirrhosis, hyperkeratosis, icterus, emaciation, and necrosis of the large intestine and soft palate. Pigs fed asphalt floor slabs and bitumen cement remained healthy. Bitumen-containing, acid resistant floor slabs are recommended for piggeries on account of their good insulating properties, provided that they and the cement are free from tar.—M.G.G.

GUSUININ, I. A. (1955). [**The toxicology of poisonous plants.**] pp. 330. Moscow: Gosud. izd. sel'skokhoz. lit. 3rd revised edit. 13r. 35k. **900**

This text-book deals with the general and special toxicology of plants poisonous to farm livestock. 139 plants are described in the special section, where they are classified according to the symptoms they produce. Botanical descriptions are kept to a minimum, emphasis being placed on their poisonous properties and on the incidence of poisoning. An "atlas" provides good full-page black-and-white drawings of 121 plants: a slight disadvantage is that no scales are provided to show relative size. Tables (pp. 281-291) neatly classify the plants according to the symptoms they cause and the manner in which they are ingested; also the plants which cause poisoning in each of the farm animals. The Russian popular names are always followed by the Latin names of the plants; there is an index to Latin names on pp. 297-302. A bibliography, covering 18 pages, aims at giving the principal references to plant poisoning.—R.M.

BLIN, P. -C. & CUQ, P. (1956). L'intoxication par les glands. [**Acorn poisoning.**]—*Rec. Méd. vét.* **132**, 674-687. **901**

A review with 44 references. Cattle are most susceptible, particularly young cattle; horses are much less so; sheep (much more resistant than horses) are sometimes severely affected; cases in pigs have been recorded, and occassional cases in dogs and fowls. The toxic principle, tannic acid, present especially when the acorns are green, can act either directly, or indirectly through its metabolic products, gallic acid and pyrogallol. The clinical picture separates cases into two very different groups (a) those with urinary symptoms (haemoglobinuria), (b) those with digestive symptoms. The digestive symptoms may be either those of severe constipation or of blood-stained diarrhoea (such cases resemble rinderpest). [It is difficult to believe that such widely different clinical pictures can be caused by the same agent. It seems probable that the cases in young cattle characterized by gastro-enteritis and resembling rinderpest in some respects may have been

wrongly attributed to acorn poisoning. They possibly belong to the group of so-called "mucosal diseases".] [See also *V.B.* **4**, pp. 777–778; **6**, p. 446, 461; **9**, pp. 739–740; **26**, 2404.]—F.E.W.

CLARKE, E. G. C. & COTCHIN, E. (1956). **A note on the toxicity of the acorn.**—*Brit. vet. J.* **112**, 135-139. **902**

Feeding tests with mice and rats were inconclusive, as dried acorn kernel meal was unpalatable except when mixed with normal laboratory diet, and no ill effects were observed. Chemical extraction by various methods yielded material which was toxic when injected parenterally. A petroleum ether, ethanol, and 80% acetone extract of the ground kernels which was water-soluble and appeared to be tannin, was the most toxic substance obtained: the average lethal dose for mice was 50 mg./kg. One of 3 rabbits and one of 2 calves died after i/p inj. of this extract, the others showing no ill effects. Similar tests in mice with commercial samples of known constituents of acorns, other than tannin (ellagic acid, gallic acid, quercitol, quercitrin), and with an unidentified alkaloid extracted from acorns by the Stas-Otto method, yielded negative results (though one of 2 mice died after inj. of quercitol, 2,000 mg./kg.). It is considered that some other factor must be involved. A review of the literature is promised.
—F.E.W.

KAMEL, S. S. (1956). Étude chimique et toxicologique d'une plante égyptienne: *Orobanche minor* Sutton. [**Chemistry and toxicology of the Egyptian plant** *Orobanche minor*.] — *Rev. Élev.* **9**, 43-48. [English and Spanish summaries.] **903**

By analysis the plant was found to contain tannin, resin and small amounts of glucosides; it produced diuresis and symptoms of gastro-enteritis in goats and dogs.—E.V.L.

OHKUBO, Y., URAKAWA, N., HAYAMA, T., SETO, Y., MIURA, T., KANO, Y., MOTOYOSHI, S., YAMAMOTO, S., ISHIDA, K., IIZUKA, H. & IIDA, M. (1955). [**Note on some cases of malt rootlet poisoning in dairy cattle.**]—*Jap. J. vet. Sci.* **17**, 145-151. [In Japanese. Abst. from English summary.] **904**

Malt rootlet poisoning was suspected in 2 dairy cows, [it is not stated in the English summary what quantity of the rootlets was fed to the cattle]. Symptoms in a calf after experimental feeding were:— anorexia, tremors and lumbar paralysis. P.M. findings included congestion of various organs, petechial haemorrhages in the serous membranes, and capillary haemorrhages in the brain [it is not stated whether the experimental animal died or was slaughtered.]

MILNE, J. A. (1955). **The occurrence of Phalaris staggers in sheep.**—*N. Z. vet. J.* **3**, 119-121. **905**

Phalaris tuberosa poisoning in sheep is described. A 2-acre experimental pasture plot had been sown, about 18 months previously, with a mixture of 10 lb. *P. tuberosa*, 4 lb. white clover and 2 lb. red clover. The resulting pasture was poor, with many weeds, and contained 75% *P. tuberosa*, 12% sweet vernal and 5% clover. The staggers syndrome was noticed after the clover and weed grasses had been utilized leaving Phalaris as the only available feed. Symptoms included hyperexcitability, marked head and face tremors, progressive muscular incoordination and a stiff gait, and exhaution. The severity of the condition varied in different animals. Of 10 that were clinically affected 6 died or were slaughtered. The survivors still showed signs of exhaustion after driving; in two of these there was exacerbation of symptoms after shearing—one died shortly after and the other was slaughtered. The only lesions observed P.M. consisted of bilateral symmetrical areas of greenish pigmentation extending from the mid-brain to the medulla. Histologically, fine yellowish-brown granules were observed within the cytoplasm of the neurones. The nature of these findings was under investigation.
—T.E.G.R.

SOUTHCOTT, W. H. (1956). **Observations on phalaris staggers in sheep.**—*Aust. vet. J.* **32**, 225-228. **906**

Staggers in sheep was prevented by top-dressing *Phalaris tuberosa* pasture with cobalt or by drenching animals with 7 mg. cobalt weekly. A common P.M. finding in affected sheep was an excess of clear pericardial fluid and, in some cases, of clear cerebrospinal fluid.
—M.G.G.

JENSEN, R., GRINER, L. A. & ADAMS, O. R. (1956). **Polioencephalomalacia of cattle and sheep.**—*J. Amer. vet. med. Ass.* **129**, 311-321. **907**

Studies of cases of this condition, also called forage poisoning or blind staggers, suggest that the disease is due to an intoxication, but it is not a manifestation of selenium poisoning. Acute and subacute forms occur, the gross lesions being multiple foci of necrosis in the cerebral cortex, necrosis of neurones, prolifera-

tion of endothelial cells, and gliosis. In clinically recovered animals, empty spaces and cysts in the cerebral cortex were seen to be surrounded by gliosis.—J. A. NICHOLSON.

NEWBERNE, P. M. & MCDOUGLE, H. C. (1956). **Studies on drug toxicity in chicks. I. The influence of various levels of Megasul (nitrophenide, M, M[1] dinitrodiphenyl disulfide) on growth and development of chicks.**—*Poult. Sci.* **35**, 1044-1049. **908**

The administration of "Megasul" to baby chicks at dietary levels above 0·0125% caused nervous disturbances which sometimes resembled infectious avian encephalomyelitis or Newcastle disease, although sections of central nervous tissue were histologically normal. Weight gains varied inversely with the drug level. Progressive anaemia was accompanied by a decrease in thrombocytes with intramuscular and subcutaneous haemorrhages. Other features were interference with osteogenesis, degeneration and necrosis of hepatic cells, depression of erythropoiesis and heterophilia.—L. M. MARKSON.

HODGE, H. C., MAYNARD, E. A. & DOWNS, W. L. (1956). **Chronic oral toxicity of ferric dimethyldithiocarbamate (ferbam) and zinc dimethyldithiocarbamate (ziram).** — *J. Pharmacol.* **118**, 174-181. **909**

Minimum toxic conc. in the food of rats of the ferric and zinc salts of dimethyldithiocarbamic acid, which are used as fungicides under the names "ferbam" and "ziram," was 0·25%. Neurological changes appeared after 2 months in rats fed this conc. No consistent symptoms were seen in dogs given up to 25 mg./kg. body wt. daily for a year, but convulsive seizures were observed in some dogs. —R.M.

See also abst. **831** (alkaloids of S. jacobaea and carcinogenesis).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

BELEN'KI, N. G. (1956). **[Problems of producing a plasma substitute from cattle blood.]**—*Proc. Lenin Acad. agric. Sci.* **21**, No. 7. pp. 11-16. [In Russian.] **910**

B. discussed the use of the preparations of chemically treated and denatured bovine plasma, known as "LSB" (therapeutic serum) and "parenterin," as plasma substitutes for human beings. It was mentioned that these substances were now being prepared in 120 litre batches. Out of over 31,000 transfusions with material prepared by the new process, adverse reactions were observed in 4·5% of patients. Precise details of preparation were not given. Hydrolysates were also prepared from cattle blood, for parenteral use as nutrients. The preparation "LSB" has been used for stimulating the growth rate of pigs [see *V.B.* **26**, 3644]. —R.M.

I. GÜNTHER, S. & TOPPEL, L. (1956). Tierexperimentelle Untersuchungen zum Nachweis der Spasmolyse (Versuche an Darm und Uterus beim Hund). **[Methods for studying the antispasmodic action of drugs on the intestine and uterus.]** — *Arch. exp. VetMed.* **10**, 1-29. **911**

II. HIEPE, T. (1956). Klinische Erfahrungen mit einem neuen Spasmolytikum in der Kolikdiagnostik und -therapie unter besonderer Berücksichtigung der Prüfung seiner Wirkung auf die glatte Muskulatur und den Kreislauf des Pferdes. **[Clinical trials of a new antispasmodic in the diagnosis and treatment of colic in the horse.]**—*Ibid.* 30-37. **912**

I. The following methods were used to study the action of antispasmodic drugs on spasm of the intestine or uterus of dogs, elicited by arecoline:— exteriorized loop of small intestine in the anaesthetized dog; repeated radiography of the large or small intestine after the administration by stomach tube of a barium contrast medium; radiographic demonstration of peristalsis by the i/p inj. of an oily contrast medium; hysterosalpingography. The results obtained by these methods were stated to be more reliable than *in vitro* tests.

II. "Spasmonal" [*a*-phenyl *a*-piperidine acetic acid-*β*-piperidine-ethyl ester hydrochloride] was a safe and effective antispasmodic. It was used in the treatment of colic in 238 horses in repeated doses of 1–3 mg/kg. body wt. (total maximum dosage 10 mg./kg.).—R.M.

SALLE, A. J. & AMESUR, B. R. (1956). **Evaluation of germicidal efficiencies of a group of antibiotics tested by tissue culture technic.** —*Proc. Soc. exp. Biol., N. Y.* **93**, 67-69. **913**

The toxicity index of a germicide was defined as the ratio of the highest dilution of the germicide required to prevent growth of tissue fragments in 10 min. to the highest dilution required to kill the test bacteria in the same

period and under similar conditions. Theoretically, an index less than one means that the germicide is more toxic to the test organism than to the tissue fragments; an index greater than one means that the germicide is more toxic to the tissue fragments than to the bacteria. The smaller the index, the more nearly perfect the chemotherapeutic agent.

The authors used minced embryonic heart tissue from embryos 12 days old, with *Staphylococcus albus* as the test organism. Full details of the method were given.

Iodine was found to have a toxicity index of 0·10, which indicated iodine to be 10 times more toxic to the bacteria than to the tissue fragments. Benzylpenicillin gave an index of 0·0024, about 42 times more efficient than iodine: streptomycin sulphate 0·02, polymyxin B sulphate 0·63 and oxytetracycline 0·67. Bacitracin and chloramphenicol were bacteriostatic and could not be evaluated.—E.V.L.

MASTRANGELO, A. (1956). ACTH et pathologie osseuse. **[A.C.T.H. in diseases of bones.]**—*Schweiz. Arch. Tierheilk.* **98,** 210-217. [In French. English, German and Italian summaries.] **914**

An account of i/m inj. of adrenocorticotrophic hormone in various bone and joint affections in 9 horses, 15 dogs and a pig, which had resisted other methods of treatment. In about 15 of the animals the cure was complete and permanent, in 5 marked, in the remainder no improvement. No local reactions or other ill effects were noted.—E.G.

IRWIN, S., STAGG, R. D., DUNBAR, E. & GOVIER, W. M. (1956). **Methitural, a new intravenous anesthetic: comparison with thiopental in the cat, dog and monkey.**—*J. Pharmacol.* **116,** 317-325. **915**

Methitural, known in the German literature as "Thiogenal", is the sodium salt of 5(2'-(methylthioethyl) - 5 - (1 - methylbutyl) - 2 - thiobarbituric acid. It had the following advantages over thiopentone sodium:—recovery from anaesthesia was more rapid; its cumulative action was less; there was less respiratory depression and cardiac acceleration. Atropine, morphine, succinylcholine, d-tubocurarine and combinations thereof were compatible with methitural in the dog. [For an account of its use in pigs, see *V.B.* **25,** 3001.]—R.M.

BALUN, J. (1956). Intubačná narkóza vo veterinárnej medicíne. **[Intratracheal narcosis in veterinary medicine.]**—*Vet. Čas.* **5,** 237-244. [In Slovak. German and Russian summaries.] **916**

An apparatus for intratracheal anaesthesia, a laryngoscope and a tracheal tube, designed for use in human beings, were tested and found suitable for dogs of various breeds and ages. —E.G.

HUEBNER, R. A. (1956). **Meprobamate in canine medicine: summary of 77 cases.**—*Vet. Med.* **51,** 488-489. **917**

"Meprobamate" given in oral doses of 100–400 mg. two to four times daily appeared to reduce nervous symptoms and aggressiveness in dogs.—M.G.G.

See also absts **657** (effect of penicillin and other chemotherapeutics on mastitis organisms in vitro); **659** (disinfectants against anthrax); **664** (TB.); **669** (glanders); **682** (chloramphenicol-hydrocortisone therapy in bovine keratoconjunctivitis); **692** (furazolidone treatment of fowl typhoid carriers); **707** (effect of antibodies on anaerobes); **713** (chloramphenicol i/m in cattle); **719** (ringworm); **731-732** ("picarbazin"); **736** (novoplasmin in piroplasmosis); **785** infectious avian laryngotracheitis); **787** (penicillin and cortisone in mouse psittacosis); **793-794** (antiviral therapy); **807, 809 & 811-814** (insecticides); **815, 822, 826 & 828** (anthelmintics); [illegible] (triethylenethiophosphoramide); **870** (chlorpromazine in laminitis); **871** (colic); **927-928** (spermine and spermidine).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

GRAY, J. (1956). **Muscular activity during locomotion.** — *Brit. med. Bull.* **12,** 203-209. **918**

While expressing the difficulty of assessing individual or group muscular activity, G. suggests that an overall picture can be obtained if the animal is regarded as a single unit effecting mechanical effort against an external environment. He discusses the mechanics involved at rest and in movement with due regard for lines of thrust and lever arrangements which might be allowed by the particular anatomy of a tetrapod. Reference is made to the "diagonal sequence" of movement which requires the centre of gravity of the body to fall within the triangle of support of three feet while the fourth is swinging forwards. Physiological integration is briefly mentioned.—C. W. OTTAWAY.

DOWLING, D. F. (1956). **An experimental study of heat tolerance of cattle.**—*Aust. J. agric. Res.* **7,** 469-481. [Author's summary modified.] **919**

The ability of cattle to maintain a normal body temp. in a dry, hot, inland Australian environment is associated with their ability to dissipate excess heat from the body. A heat tolerance test, based on rectal temp. responses after exercise, is reported. The test indicates the animal's capacity to lose heat. Forty ani-

mals, classified on their coat covering, were used. The differences in coat covering are described and associated with differences in rectal temp. under various forms of heat stress. The results illustrate the basic weaknesses of any field test (or hot-room test) which cannot be carried out under conditions where major factors influencing the "adaptability" and type of coat can be kept uniform for all animals tested.

YEATES, N. T. M. (1956). **Influence of nutritional state on the heat tolerance of cattle.**—*Nature, Lond.* **178,** 702-703. **920**

Heat tolerance observations on groups of cattle on high and low nutritional levels show that high condition is not in itself a disadvantage in withstanding heat, but in either fat or poor cattle, a high current rate of feeding under hot conditions may add seriously to the heat load.—J. A. NICHOLSON.

YEATES, N. T. M. (1956). **The effect of high air temperature on pregnancy and birth weight in Merino sheep.**—*Aust. J. agric. Res.* **7,** 435-439. [Author's summary modified.] **921**

During the winter of 1954, 21 pregnant Merino ewes were exposed daily, 7 hours a day, to an air temperature of 150°F. dry-bulb, 92°F. wet-bulb, in a psychrometric room. Nine of the ewes were heated from the date when mating started and the other 12 from the 38th day of pregnancy. Birth weights of the lambs showed no significant difference from those of 10 unheated control ewes pregnant during the same period. However, when exposed the following year, for the same period daily throughout pregnancy, to a higher temp., namely 112°F. dry-bulb, 98°F. wet-bulb, 10 experimental ewes produced lambs having a mean birth weight 1 lb. 13 oz. less than that of the lambs of 8 control ewes. The difference was highly significant statistically. It was concluded that pregnancy in Merinos is adversely affected by extremely high atmospheric temp.; and that this might explain the low birth weight of lambs born after a summer gestation in tropical Queensland and in certain other parts of Australia when an unusually hot summer occurs.

YEATES, N. T. M. (1956). **The effect of light on the breeding season, gestation, and birth weight of Merino sheep.** — *Aust. J. agric. Res.* **7,** 440-446. [Part of author's summary copied *verbatim.*] **922**

Merino ewes, running continuously with vasectomized rams, exhibit a definite seasonality in the incidence of oestrus. Although less decisively separated into seasons of quiescence and activity, the oestrus pattern resembles that of the British breeds of sheep. The pattern may be reversed by artificially reversing the seasonal trend of daylight duration. This is presumptive evidence that the natural breeding season of Merinos is regulated by seasonal fluctuations in the length of day.

Pregnant ewes, subjected during wintertime to a summer level of light, produced lambs of normal birth weight following a gestation of normal length. This indicates that summer heat is the factor responsible for the low weight sometimes reported of lambs produced out of season.

REECE, R. P. (1956). **The physiology of milk production.**—*J. Dairy Sci.* **39,** 726-734. **923**

R. reviewed the various physiological functions of the mammary gland with particular reference to changes in accepted views during the past century. Growth of the mammary gland, initiation and endocrine control of lactation are discussed in detail as are the factors controlling milk secretion and discharge. R. is of the opinion that better knowledge of the physiological differences between low- and high-yielding cows may eventually be utilized in the breeding of high-yielding dairy cows, and in the preparation of consistently barren animals for lactation.—F. K. LEEB.

BRADLEY, T. R. & COWIE, A. T. (1956). **The effects of hypophysectomy on the *in vitro* metabolism of mammary gland slices from lactating rats.**—*J. Endocrin.* **14,** 8-15. **924**

It was found that slices of mammary gland taken from lactating rats 24 hours after hypophysectomy used less glucose and produced more lactic acid than similar slices from normal animals. Removal of other endocrine organs was not followed by any changes in the metabolism of mammary slices.—J. A. NICHOLSON.

DEPELCHIN, A. (1956). Le myélogramme normal des espèces bovine et canine. [**The normal myelogram of cattle and dogs.**]—*C. R. Soc. Biol., Paris.* **150,** 1044-1046. **925**

Nineteen cattle and 15 dogs were studied. Using a trocar of 1·5 mm. internal diam. with an adjustable guard for penetration depths of 1–3 cm., the puncture was made at the level of the iliac crest in dogs; at the external angle of the ilium in cattle under 3 years old, and at the 7th sternal vertebra in older cattle. The smears were stained by the May-Grünwald-Giemsa method. The erythrocyte series outnumbered the granulocyte series in cattle, whereas the reverse was found in dogs. The mitotic index for the erythrocyte series was 10·9% in cattle and 13·1% in dogs. Corres-

ponding values for the granulocyte series were 5·75% and 3% respectively. The proportion of lymphocytes was higher in cattle than in dogs. Full details are tabulated. Although the animals were clinically healthy and in good condition, the possibility of lymphoid leucosis in cattle and anaemia in dogs should not be excluded.

—F.E.W.

SPISNI, D. & FRATESCHI, T. L. (1956). Variazioni della gamma globulina nel siero di sangue di capre e di pecore a seguito del parto, determinate con l'impiego dell'elettroforesi. **[An electrophoretic study of the globulins in the serum of goats and sheep after parturition.]** — *Ann. Fac. Med. vet. Pisa.* **8,** pp. 192-196. [English and French summaries. English summary modified.] **926**

There was a decrease of the γ-globulin fraction shortly after parturition.

I. ROSENTHAL, S. M. & TABOR, C. W. (1956). **The pharmacology of spermine and spermidine. Distribution and excretion.** — *J. Pharmacol.* **116,** 131-138. **927**

II. TABOR, C. W. & ROSENTHAL, S. M. (1956). **Pharmacology of spermine and spermidine. Some effects on animals and bacteria.**—*Ibid.* 139-155. **928**

I. Spermine and spermidine were present in similar amounts in various tissues of lab. animals and in the oviduct of hens. That these substances were of endogenous origin was indicated by the finding of similar amounts in rats reared on a purified diet, in a germ-free rat, and in new-born animals. Following i/v inj., spermine appeared to accumulate in the kidneys.

II. The toxicity of spermine and spermidine was due to their causing renal tubular necrosis. These substances were also highly toxic *in vitro* to spermatozoa, several species of bacteria and, to a lesser degree, trypanosomes.—R.M.

BORN, G. V. R., DAWES, G. S. & MOTT, J. C. (1956). **Oxygen lack and autonomic nervous control of the foetal circulation in the lamb.** —*J. Physiol.* **134,** 149-166. [Authors' summary modified.] **929**

The oxygen content of the blood in foetal lambs was reduced by decreasing the supply of oxygen to the dams. There was an approximately linear relationship between foetal and maternal O_2 values at equilibrium. In mature foetuses anoxaemia caused an immediate increase in heart rate, blood pressure, umbilical blood flow and in the O_2 carrying capacity of the blood. The heart did not slow until the foetal carotid O_2 saturation was less than 20% in 6 of 8 cases. In immature foetuses (59–71 days' gestation) anoxaemia did not cause an increase in blood pressure or heart rate. The increase in O_2 capacity in foetuses of less than 91 days' gestation was significantly less than in mature ones. In mature foetuses asphyxia caused by partial occlusion of the umbilical vein also caused an increase in heart rate and in the O_2 carrying capacity of the blood. The changing responses of the circulation of the foetal lamb from 60 days of gestation to term as a result of anoxaemia are consistent with increasing activity of the autonomic nervous system.

CLEMEDSON, C. -J., HARTELIUS, H. & HOLMBERG, G. (1956). **Effect of carbon dioxide inhalation on the blood-brain barrier.** — *Nature, Lond.* **178,** 915. **930**

Using trypanblue to study the reaction of the blood-brain barrier to CO_2, it was found that in rabbits definite changes were produced after exposure for 3 min. to 30%CO_2. The damage to the walls of the blood vessels was reversible, but it is concluded that excess of CO_2 in the blood may be a cause of cerebral damage as, for example, in asphyxia.

—J. A. NICHOLSON.

BONFERT, W. (1956). Untersuchungen über den Lobus intermedius der Hundelunge. **[Study of the intermediate lobe of the lung of the dog.]**—*Anat. Anz.* **103,** 109-112. **931**

The intermediate lobe of the lungs of all of 14 dogs examined had two branches which sometimes encompassed the posterior vena cava.

—R.M.

OCARIZ GÓMEZ, J. (1956). Modificaciones citológicas del tiroides en las ratas castradas. **[Cytological changes in the thyroid gland of castrated female rats.]**—*Rev. Patronato Biol. anim., Madrid.* **2,** 181-204. **932**

Large, roughly spherical, "sponge-like" cells, seen during histological examination of thyroid glands from female rats, were studied. They were submerged in the colloid substance in the lumen of peripheral follicles, from the walls of which they appeared to have desquamated. They were present in 229 of 1,500 sections from normal females, and in 1,339 of 1,522 sections from spayed rats (15 days after ovariectomy). In rats injected with 50 i.u. folliculin daily for 15 days after ovariectomy, these cells were present in 1,551 out of 1,560 sections of thyroid; in spayed controls injected with ovarian extract free from folliculin and progesterone they were present in only 748 out of 1,610 sections. In adult untreated rats, 3

months after ovariectomy, they were present in only 445 out of 1,616 sections. The cells were probably colloid cells of Langendorff, but instead of being dead or moribund they appeared to be actively secreting colloid substance.—F.E.W.

DALE, R. A. (1956). **The adrenocortical control of sodium metabolism.** — *J. Endocrin.* **14,** 171-180. [Author's summary slightly modified.] **933**

The urinary sodium output in adrenalectomized rats maintained on deoxycortone acetate and cortisone varied closely with the intake of sodium, in spite of a constant level of hormone administration. There was evidence of lack of control of body sodium and potassium at both high and low extremes of sodium intake. It is argued that the results presented are evidence of (a) extra-adrenocortical control of sodium metabolism, and (b) increased adrenocortical secretion following sudden changes in dietary sodium.

See also absts. **971** (book, lactation); **972** (transactions of conference on nerve impulse).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

JOHNSON, A. S. (1956). **Genetic and seasonal variation in incidence of blood and meat spots in chicken eggs.**—*Canad. J. agric. Sci.* **36,** 390-393. **934**

Examination of some 23,000 eggs over a 10-month period indicated a seasonal trend of blood and meat spots, gradually increasing until late spring. Estimates of the heritability of incidence of blood spots demonstrated a lower incidence (0·066%) in the heavier breed (Barred Rock) than in White Leghorn (0·211%). A similar study on meat spots indicated an incidence of 0.25% in Barred Rocks. Evidence is presented to support the theory that these inclusions are distinctly different entities.

—R. V. L. WALKER.

See also absts. **695** (brucellosis in man and cattle); **699** (brucellosis and meat inspection); **817** (trichinosis); **819** (sewage and helminth infestation in domestic animals).

REPRODUCTION AND REPRODUCTIVE DISORDERS

DU MESNIL DU BUISSON, F. & DAUZIER, L. (1956). Données expérimentales sur l'insémination naturelle et artificielle de la truie. **[Artificial insemination in pigs.]** — *Proc. IIIrd Int. Congr. Anim. Reprod., Cambridge.* Sect. III. pp. 62-65. [In French. English summary.] **935**

Trials with 215 pigs, using semen diluted in egg yolk or milk, demonstrated the necessity of using a large volume (250 ml.) of the diluted semen. Addition of streptomycin or penicillin improved results. It was difficult to determine the optimum time for insemination without the aid of a "teaser."—E.V.L.

MIES, A., JR. & RAMOS, A. A. (1954). Volume de sêmen ejaculado por ovinos das raças Merino Argentina, Merino Australiana, Corriedale, Ideal e Romney Marsh. **[Volume of semen ejaculated by rams of five breeds.]**—*Bol. Insem. art.* **6,** Nos. 2 & 3. pp. 7-15. [English and French summaries. Abst. from English summary.] **936**

In a study of 181 rams of 5 different breeds the average volume of semen per ejaculate was 1 ml., with a minimum of 0·1 ml. In one case it was as much as 5·2 ml. The monthly minimum—maximum averages for the different breeds were:— Romney Marsh, 0·8–1·6 ml.; Australian Merino, 0·6–1·3 ml.; Argentine Merino (Rambouillet), 0·7–1·7 ml.; Polwarth, 0·9–1·2 ml.; Corriedale, 0·8–1·1ml.

SOKOLOVSKAYA, I. I., DROZDOVA, L. P., GOLUISHEVA, M. G., KOROTKOV, A. I., MAXIMOV, Y. V. & LEBEDEVA, V. A. (1956). **[Improvement of diluents for semen of farm animals.]**—*Proc. Lenin Acad. agric. Sci.* **21,** No. 7. pp. 17-24. [In Russian.] **937**

Two diluents for bull and ram semen were described. The composition of the first, for bull semen, was:— glycine 0·5 g.; crystalline sodium citrate 2·3 g.; crystalline penicillin, potassium or sodium salt, 0·03 g.; streptomycin 0·05 g.; one egg yolk; concentrated mucinase 0·07 g.; distilled water 100 ml. The second diluent, for bull semen, was :— glycine 0·5 g.; sodium citrate 2·3 g.; pure glycerol 2·5 ml.; one egg yolk; mucinase 0·07 g.; distilled water 100 ml. For ram semen, these two diluents were the same except for the amount of glycine, which was 0·27 g. instead of 0·5 g., and mucinase, which was 0·04 g. instead of 0·07 g.—R.M.

SAACKE, R. G., ALMQUIST, J. O. & FLIPSE, R. J. (1956). **Diluters for bovine semen. VII. Effects of time and temperature of heating skimmilk upon the livability of bovine**

spermatozoa.—*J. Dairy Sci.* **39**, 90-96. **938**

Skim milk was heated rapidly to temperatures ranging from 73° to 105° for 3, 9 and 27 min. Maximum viability of spermatozoa was in milk treated at: 81°–105°C. for 3 or 9 min.; and 73°–97°C. for 27 min. It was significantly lower in milk treated at 73°C. for 3 or 9 min. and at 105°C. for 27 min. Time of heating was important only at the temperature extremes (73° and 105°C.) thus accounting for a significant time-temperature interaction. With milk heated to 77°–97°C. for 1 or 10 min. optimum viability was in the ranges: 87°–97°C. for 1 min.; and 77° to 97°C. for 10 min. There was a significant decrease in viability with milk heated to 77° and 82°C. for 1 min.—T.E.G.R.

HOPWOOD, M. L., RUTHERFORD, E. R. & GASSNER, F. X. (1956). **The concept of fructose utilization by bull sperm and its relation to fertility.**—*J. Dairy Sci.* **39**, 51-59. **939**

The rate of fructolysis as expressed by a "fructolysis index," which is considered relatively easy to determine, was found to be correlated to the fertility of the semen samples examined.—T.E.G.R.

MANN, T. & WHITE, I. G. (1956). **Metabolism of glycerol, sorbitol and related compounds by spermatozoa.**—*Nature, Lond.* **178**, 142-143. **940**

Experiments with ram spermatozoa show that they ultilize glycerol aerobically with the accumulation of lactic acid. Of the other alcohols tested, sorbitol was the only one which produced a marked increase in the oxygen uptake of washed spermatozoa.

—J. A. NICHOLSON.

CRESPO GARCÍA, J. (1956). Las anormalidades morfológicas del espermatozoide del toro. **[Morphological abnormalities of bull semen.]** —*Rev. Patronato Biol. anim., Madrid.* **2**, 205-240. **941**

620 samples of semen from 10 healthy fertile bulls, aged 18 months to 5 years, were examined by the stained smear technique with precautions to prevent "artefacts." The diluent used was 8·2 per thousand saline soln., 0·5–1 ml. per drop of semen according to its concentration. Before fixing and staining the slides were covered with aqueous chloramine soln. 0·5% for 30 sec.; this gave excellent results. Methyl green and crystal violet stains were both used; the latter was better where photomicrographs were to be made, but methyl green gave more detail in the head cap. With immersion objective × 1,000 magnification, 100 spermatozoa were counted in each of two preparations from each sample. Thirty-one types of abnormality were recorded in 5 groups according to localization. Abnormalities were found on average in 11·9% of the spermatozoa (minimum zero, max. 26%); these included: head 3·3% (limits 0 and 18%), middle-piece 3·2% (0 and 16%), tail 3·4% (0 and 16%), head cap 1·6% (0 and 18%), presence of cytoplasmic droplet 0·4% (in the centre of the middle-piece, 0·04%). In sexually mature bulls the percentage of abnormal spermatozoa increased with age. No relationship was found between the "spermiogram" and the volume, concentration and percentage of dead spermatozoa in an ejaculate. At least 10 ejaculates from each bull should be examined.

—F.E.W.

MACPHERSON, J. W. (1956). **Fertile bovine semen after three years' storage.**—*J. Amer. vet. med. Ass.* **129**, 416. [Author's summary modified.] **942**

Frozen semen samples from 5 bulls were found to be fertile after storage for 3 years in a dry-ice storage chest. In some samples there was no noticeable loss of motility, while in others there were only small numbers of weakly motile spermatozoa or none at all.

LINDAHL, P. E. (1956). **Counter-streaming centrifugation of bull spermatozoa.**—*Nature, Lond.* **178**, 491-492. **943**

Bull spermatozoa increased in density during maturation to such a degree as to mask any difference in sedimentation rate between X- and Y- chromosomes.—J. A. NICHOLSON.

HAYS, R. L. & CARLEVARO, C. H. (1956). **The induction of estrus in cows by electrical stimulation.**—*J. Dairy Sci.* **39**, 920. **944**

Oestrus was induced in 6 cows which had not shown signs of heat for 42–166 days, and also in cows which had not been in heat for 50–60 days after calving, by means of an electro-ejaculatory apparatus inserted into the rectum. Palpation and slaughter revealed that in each case a corpus luteum was formed.

—M.G.G.

INGRAM, D. L. (1956). **Observations on the ovary cultured *in vitro*.**—*J. Endocrin.* **14**, 155-159. [Author's summary slightly modified.] **945**

The ovaries of rats and mice ranging in age from foetal life to sexual maturity were cultured and studied *in vitro*. Structures which had some resemblance to oocytes were seen among the epithelial cells which grew out from the ovarian tissue, but it was concluded that

they were not oocytes. No evidence for the neoformation of oocytes was obtained. Serial sections of ovaries, which had been fixed after various periods of culture, were examined for signs of oogenesis. Numerous oocytes in the prophase of cell division were seen in foetal and neonatal material, but not in cultures of adult, or even prepuberal material.

BARDHAN, N. R. & BHADURI, J. L. (1956). **Calcutta male toad, *Bufo melanostictus*, as test animal in the diagnosis of pregnancy of Bangalore cattle.**—*Indian J. Dairy Sci.* **9,** 9-16. **946**

When aqueous extracts of faeces from cattle were injected into *B. melanostictus* toads, false-positive reactions occurred (*i.e.*, with non-pregnant, castrate and entire male animals). Using gradually decreasing concentrations of faeces, positive reactions with bulls were eliminated at 5%, castrates at 3% and non-pregnant animals at 2%. The 2% formula was therefore considered suitable for routine pregnancy diagnosis in Bangalore cattle. [See also *V.B.* **20,** 1125; **21,** 2166, 3738; **23,** 1049,1050; **24,** 2943, 4186.]—F.E.W.

BAJEZ, E. (1956). Ein Beitrag zur Therapie häufiger Geburtsstörungen bei Ziegen mit Retalon aquosum. [**Use of hexoestrol diphosphate in parturient complications in goats.**]—*Wien. tierärztl. Mschr.* **43,** 615-617. **947**

Insufficient dilatation of the cervix in goats with premature rupture of the foetal membranes or insufficient primary labour was successfully treated with an i/v injection of 50–100 mg. hexoestrol diphosphate. Within 2–3 hours after injection the cervix and cervical canal dilated fully and manual assistance could begin.

—M.G.G.

NOLAND, P. R. & BURRIS, M. J. (1956). **The effect of oral administration of methyl testosterone on swine growth and development.**—*J. Anim. Sci.* **15,** 1014-1019. [Abst. from authors' summary.] **948**

In a feeding trial with 32 pigs, 4 groups, each consisting of 2 entire and 2 castrate males, 2 entire and 2 spayed females, were given methyl testosterone, 0·015, 0·15 and 1·5 mg., respectively, per kg. body wt. daily, the 4th group being untreated controls. While the wt. gain of males was unaffected, that of females was slightly depressed by 0·15 mg. Spermatogenesis in boars was markedly depressed by 1·5 mg. and development of interstitial tissue was depressed in all test groups. The carcasses of pigs in the test groups were somewhat leaner than those of the controls.

ROBINSON, T. J. & MOORE, N. W. (1956). **The interaction of oestrogen and progesterone on the vaginal cycle of the ewe.**—*J. Endocrin.* **14,** 97-109. [Authors' summary modified.] **949**

The vaginal smear pattern of the intact ewe experiencing normal oestrous cycles was compared with that of the spayed untreated ewe, and with the spayed ewe injected with a physiological dose-level of oestradiol benzoate (ODB) administered either alone or alternating with progesterone injected in a time-dose relationship closely approximating that of the intact animal. Normal vaginal cornification appeared to be a result of stimulation by oestrogen. The normal manifestation of leucocytic invasion and changes in the viscosity of mucus appeared to be dependent on an interaction between oestrogen and progesterone. Some vaginal cornification was apparent on the first day of oestrus, or 48 hours after the injection of ODB, but maximum cornification occurred 2 days later. For a maximum response, as measured by the number of ewes which yielded one or more cornified smears, it was necessary to take smears daily during the first 4 days of oestrus. A standard method of appraisal of vaginal smears was evolved by relating the smear pattern of the ODB-injected spayed ewe to that of the normal intact ewe. This is considered suitable for quantitative assay work. A positive vaginal smear is one which is virtually free from leucocytes but contains appreciable numbers of cornified cells either alone or in association with squamous and/or nucleated epithelial cells. The various types of typical cornified smears are illustrated.

STOB, M. (1956). **Fecal elimination of hormones in sheep and cattle treated with synthetic estrogens.**—*J. Anim. Sci.* **15,** 990-996. [Author's summary modified.] **950**

Oestrogens were found in the faeces of sheep treated with diethylstilboestrol subcutaneously, and dienoestrol orally, as well as in the faeces of cattle treated orally with diethylstilboestrol, dienoestrol and hexoestrol. The reproduction performance of young female pigs kept in pens with the hormone-treated cattle for 140 days was not impaired. In young boars penned with treated cattle for 114 days, testicular hypoplasia was demonstrable; this probably resulted from suppression of gonadotrophic hormone secretion

by the pituitary gland on account of the exogenous hormone from the cattle faeces that were ingested.

STOB, M., PERRY, T. W., ANDREWS, F. N. & BEESON, W. M. (1956). **Residual estrogen in the tissues of cattle treated orally with diethylstilbestrol, dienestrol, hexestrol and chlortetracycline .**—*J. Anim. Sci.* **15,** 997-1002. [Authors' summary modified.] **951**

Oestrogenic residues were detected in the muscle, kidney fat, kidney, intestine and liver of cattle treated orally with diethylstilboestrol, but not in the muscle of cattle treated orally with dienoestrol. In cattle treated orally with hexoestrol, oestrogen was retained only in the kidney and kidney fat; oral administration of chlortetracycline in combination with hexoestrol had no apparent effect on the degree of residual oestrogenic activity. The minimum time required for significant response of the uterus of the spayed mouse to oral administration of a minute amount of diethylstilboestrol was 3 days.

TUCHMANN-DUPLESSIS, H. & MERCIER-PAROT, L. (1956). Prolongation de la durée de gestation de la ratte après traitement par l'hormone somatotrope. **[Prolongation of the gestation period of rats after treatment with somatotropic hormone.]**—*C. R. Soc. Biol., Paris.* **150,** 951-954. **952**

On the 8th days of gestation the foetuses of rats receiving 10 i.u. of anterior pituitary growth hormone daily were at about the same stage of development as the embryos of control rats. It is considered that the foetal gigantism resulting from treatment with this hormone is due to prolongation of the gestation period.

—M.G.G.

MCTACKETT, A. R. (1956). **Infertility in dairy breeds in south-east Queensland.**—*Aust. vet. J.* **32,** 166-172. **953**

Prolonged anoestrus after calving was associated with poor nutrition which may be influenced by climatic conditions. In 9 herds, 43% of cows did not show oestrus within 100 days after parturition. Returns to service due to faulty husbandry, vibriosis, brucellosis, trichomoniasis and other infections were reported. Brucellosis, and, to a lesser extent, tick fever, leptospirosis, three-day sickness and arsenical poisoning caused abortions. Sterility in bulls occurred after injuries, overwork, lack of green feed, and abscesses of the genital organs. Pasture improvement and fodder conservation for winter feeding is necessary to control anoestrus in areas of poor nutrition. Artificial insemination, herd quarantine and sexual rest with replacement of bulls helped to control returns to service. Results of antibiotic therapy, used in attempts to reduce the period of sexual rest, were encouraging.

—I. C. A. MARTIN.

OCHI, Y., OGATA, M., UCHIDA, K., KONISHI, S., TAKIZAWA, T. & ISHIZAKI, R. (1955). **[Studies on the treatment and prevention of reproductive failures in livestock. II. Bacteriological examination of the vagina and uterus of infertile cows.]**—*Jap. J. vet. Sci.* **17,** 217-223. [In Japanese. Abst. from English summary.] **954**

In a study on 144 dairy cows *intra vitam* and on 88 slaughter cows P.M. the main diseases encountered were, in order of frequency: endometritis, retained placenta, ovarian cysts and other causes. A list of organisms isolated from the genital tract is also given.

JONES, S. V., BELLOFF, G. B. & ROBERTS, H. D. B. (1956). **Clinical use of a new nitrofuran dosage form in the retained placenta syndrome in cattle.**—*Vet. Med.* **51,** 413-415 & 440. **955**

Insertion of "Furea" (1·45% nitrofurazone and 98·55% urea) into the horns of the uterus has given excellent results in the treatment of this condition in cattle. It appears to have no toxic or irritating properties; up to 24 g. have been inserted into one uterine horn without ill effect.—M.G.G.

TRASLER, D. G., WALKER, B. E. & FRASER, F. C. (1956). **Congenital malformations produced by amniotic-sac puncture.**—*Science.* **124,** 439. **956**

In 14 pregnant mice, on the 13th day of gestation, the amnion of each embryo in one uterine horn was punctured. The embryos in the other horn served as controls. Six mice aborted or resorbed their litters. In the remaining 8 litters, 10 of the 17 disturbed embryos that survived had cleft palates, whereas the palates of the 15 control embryos were normal. It appears that the loss of amniotic fluid constricted the embryos, forcing the tongue between the palatine shelves.—M.G.G.

BEATTY, R. A. (1956). **Relation between genetic constitution of an offspring and weight of its litter-mates.**—*Nature, Lond.* **178,** 48-49. **957**

Observations on rabbits artificially insemi-

nated with semen from large and small bucks suggest that when genetically large and small offspring are born together in mixed litters, their difference in weight at birth is greater than when the offspring are born in litters of one type only. This may be due to embryonic competition as a result of which an enhancement effect is produced.—J. A. NICHOLSON.

See also absts. **694-699** (brucellosis); **708-709** (V. fetus); **712** (granular vaginitis in cattle); **715** (infertility and abortion in sheep and goats and incidence of E. monocytogenes and V. fetus); **764** (ovine virus abortion); **853** (vitamin A metabolism in calves and pregnant cows); **855** (vitamin A deficiency and bovine sterility); **886** (radiation injury as cause of sterility and foetal damage); **921** (high air temperature, pregnancy and birth weight in sheep); **922** (effect of light on reproduction in sheep); **926** (electrophoresis of serum of parturient goats and sheep); **929** (effect of lack of oxygen on foetal circulation in sheep); **973** (book, pregnancy diagnosis in cattle); **974** (elements of genetics).

ZOOTECHNY

BLENDINGER, W. (1956). Ein neuartiger Gleitschutz für den Hufbeschlag. **[A method of shoeing to prevent slipping.]**—*Tierärztl. Umsch.* **11**, 372-373. **958**

B. described a method of shoeing to prevent slipping by welding small pieces of a special hard metal alloy to the road surface of the shoe. —E.G.

ROBERTS, N. C. (1956). **Equine euthanasia.**—*J. Amer. vet. med. Ass.* **129**, 328. **959**

The injection of 100 ml. of conc. barbiturate soln. into the jugular vein over a period of 30 sec. is considered a satisfactory method of euthanasia for horses. It was employed on 23 animals aged 1–16 years; collapse followed within one min. of injection.—T.E.G.R.

HILLS, D. M. & MACDONALD, I. (1956). **Hand-rearing of rabbits.**—*Nature, Lond.* **178**, 704-705. **960**

Rabbits taken from the doe at birth were fed cow's milk about every 3 hours by means of feeding bottles with rubber teats. They were weaned when about 4 weeks old. Calcium caseinate was whipped into the milk at the rate of 15 g. per 10 oz. of milk for the first 7 days, when the level was raised to 17 g./10 oz. At 14 days it was raised to 20 g. 10 oz. Two hazards were the inhalation of milk, causing fatal pneumonia, and an enteritis successfully treated with i/m doses of chloramphenicol. —M.G.G.

TECHNIQUE AND APPARATUS

DAWES, E. A. & HOLMS, W. H. (1956). **Apparatus for aeration and sampling of bacteria during growth and metabolic studies.** —*Nature, Lond.* **178**, 318-319. **961**

Two types of glass apparatus were devised: one suitable for such organisms as *Bact. coli* and *Bact. aerogenes,* the other for studies with *Sarcina lutea.* Both pieces of apparatus can be adapted for studies on anaerobic bacteria. —M. B. HAWKSLEY.

THEILE, H. (1956). Einrichtung zur hygienischen Verbesserung, Beschleunigung und Erleichterung des Kanülenwechsels. (Beschreibung einer "Kanülenwechseltrommel"). **[A sterilizable syringe-needle dispenser.]**—*Mh. MedVet.* **11**, 509-511. **962**

The dispenser consists of a round metal container, holding a rotating drum with 36 syringe needles, presenting one needle at a time through a slot. Used needles are put in an empty dispenser and sterilized by boiling.—E.G.

WRIGHT, C. B. (1956). **A semi-automatic all-glass pipette.**—*N.Z. J. Sci. Tech. Sect. B.* **38**, 66-67. **963**

W. describes a semi-automatic device to replace the tilt-measures previously used in estimations which require the dispensing of strong acids and hot reagents. The advantages of the pipette are increased speed and accuracy and reduced hazard from spillage. Schematic diagrams and operating instructions are given. —E.V.L.

WEINHOLD, E. (1956). Blutentnahme beim Kaninchen aus der Vena jugularis. **[Collection of blood from the jugular vein of the rabbit.]** — *Zbl. Bakt.* I. (*Orig.*). **166**, 324-325. **964**

A blood sample of 20–30 ml. can be taken harmlessly from the jugular vein of a rabbit, 1·5–2 kg. in weight, when the animal is firmly held and the thumb pressed against the vein above the first rib.—M.G.G.

See also absts. **707** (a method for studying effect of antibiotics on anaerobes); **709** (cultivation of V. fetus); **716** (cultivation of H. farciminosum); **973** (book, pregnancy diagnosis in cattle).

REPORT

INDIA. (1955). **Annual report of the Indian Veterinary Research Institute, Mukteswar and Izatnagar, for the year 1950-51.** [DATTA, S.] pp. 97. Delhi: Govt. of India Publication Branch. Rs. 1.10.0. **965**

The Institute, established in 1890, officially celebrated its Diamond Jubilee in March, 1951.

In field vaccinations of 1,229 indigenous cattle, 250 sheep and 92 goats, the Nakamura III lapinized strain of RINDERPEST virus evoked no marked rise in temperature and had no ill effect even in cows in lactation or in advanced pregnancy. The vaccinated animals were immune to challenge 9 and 13 months later. Freeze-dried NEWCASTLE DISEASE virus was potent even at 10^{-7} dilution after storage at 42°C. for 16 days, 37°C. for 40 days, and in the refrigerator for 120 days. Application of the virus by the "stick" method was as effective as by s/c injection. Animals vaccinated with FOOT AND MOUTH DISEASE crystal-violet vaccine prepared at Mukteswar were immune to challenge 13 months later.

Field vaccination tests against CAPRINE CONTAGIOUS PLEUROPNEUMONIA showed that formolized lung and Izatnagar attenuated culture were safer than crude exudate or lymph, which caused some deaths among vaccinated animals.

Salmonella pullorum and *S. gallinarum* infections were diagnosed in fowls for the first time in India. *S. typhi-murium*, and an organism of the Kauffmann-White Group E, were isolated from two outbreaks of SALMONELLOSIS in g. pigs.

Tuberculin tests on 709 cattle, 371 sheep and 45 goats revealed positive or doubtful reactions in 10 cattle, 19 sheep and 3 goats. Johnin tests on 980 cattle, 486 sheep and 178 goats revealed positive or doubtful reactions in 10 cattle, 14 sheep and 13 goats. Tuberculin prepared on a synthetic medium containing ammonium succinate and glycerol in place of asparagine had satisfactory amounts of tuberculin protein. Preliminary tests in infected ponies with a purified protein derivative of mallein gave satisfactory results. Papain could satisfactorily replace peptone in culture media for *Bact. coli* and *B. anthracis*.

Entamoeba from cattle, buffaloes, sheep and goats were morphologically similar; an iodine vacuole was present in fresh specimens of the organism from cattle.

Infestation with *Schistosoma indicum* was induced in white rats, g. pigs, rabbits, kids and lambs. The life-history of *S. suis* was studied; infestation was induced in pigs, dogs, lambs, kids, rabbits, g. pigs and white rats by dosing with cercariae from laboratory-bred *Limnaea luteola* snails, but not in cattle and horses. A new type of cercaria was found in *L. luteola*, and this resulted in the discovery of a new species of *Ornithobilharzia* when fed to a clean bull calf. Meal beetles and their larve were found to be intermediate hosts of *Hymenolepis nana* and *H. diminuta* of rat and man. Artificially induced deficiencies of vitamin A, calcium and protein rendered chicks more susceptible to *Ascaridia galli* infestation than controls. Myiasis due to *Oestrus ovis* was found in some workers in a wool factory. Egg-masses of *Tabanus* were parasitized and destroyed by a small hymenopterous insect. *Hyalomma savignyi* and *Boophilus microplus* were parasitized by *Hunterellus hookeri*. Earthworms fed spores of *B. anthracis* and surviving up to 47 days harboured the organism in their gut.

The Animal Nutrition Section investigated problems relating to climatic physiology, nutritive value of indigenous grasses and shed tree leaves, simple methods for estimating biological value of proteins, comparative nutritive value of different oil cakes, vitamin A deficiency in lambs, nutritional requirements of goats, phytic acid content of feeding stuffs, and selective absorption of fluorine from soil by cereals and straws.

The Animal Genetics Section studied the effect of feeding different protein levels on semen production in bulls, use of antibiotics for prolonging the viability of semen, role of the gelatinous mass in rabbit semen, and induction of sterility in cows with massive doses of pregnant mares serum.

The Biological Products Section supplied 1,564,200 doses of RINDERPEST serum, 358,860 of HAEMORRHAGIC SEPTICAEMIA serum, 132,660 of ANTHRAX serum, 106,980 of BLACKLEG serum, 6,518 of FOWL CHOLERA serum, 1,597,886 of HAEMORRHAGIC SEPTICAEMIA vaccine, 534,208 of BLACKLEG vaccine, 124,096 of FOWL POX vaccine, and 17,626 of FOWL CHOLERA vaccine. Other products were goat-adapted RINDERPEST vaccine, also NEWCASTLE DISEASE, ANTHRAX, SHEEP POX and GOAT POX, *Br. abortus*, EQUINE ABORTION vaccines, and a variety of other sera, vaccines and diagnostic agents.—R. N. MOHAN.

BOOK REVIEWS

WENRICH, D. H., LEWIS, I. F. & RAPER, J. R. [Edited by.] (1954). **Sex in microorganisms. A symposium presented on December 30th, 1951 at the Philadelphia meeting of the American Association for the Advancement of Science.** pp. v+362. Washington: American Association for the Advancement of Science. 51s. 6d. **966**

Whether or not sexual reproduction occurs in micro-organisms depends, in doubtful cases, on how one defines sex. This is the theme of this series of 10 papers, read at a meeting of the American Association for the Advancement of Science. The papers deal individually with bacteriophages, bacteria, fungi, diatoms, algae, protozoa and ciliates. D. H. Wenrich, in his summing-up 'Comments on the origin and evolution of "sex" ', concludes that "sex" has a very wide distribution amongst micro-organisms, although in certain groups it is very uncommon or apparently absent. Its evolution is as obscure as that of many of the groups of organisms themselves. An item of direct veterinary interest is a discussion by Wenrich on reproduction in trypanosomes (pp. 144–147). Dealing with *Bact. coli,* J. Lederburg & E. L. Tatum state that in mixed cultures under suitable conditions a small number of cells of certain strains of this organism undergo a process of recombination of genes governing a wide variety of characters (p.25).—R.M.

MOZLEY, A. (1955). **Sites of infection. Unstable areas as sources of parasitic diseases: schistosomiasis and fascioliasis.** pp. x+86. London: H. K. Lewis & Co. Ltd. 9s. **967**

This small book continues the theme of the author's previous publications [see *V.B.* **23,** 3244; **24,** 1729 & **25,** 854], being an illustrated discourse on the geographical incidence of snail vectors of schistosomiasis and fascioliasis, and their control.—R.M.

HOVORKA, J. (1954). Helmintologická diagnostika. I. Laboratórna diagnostika helmintóz. **[Helminthological diagnosis. I. Laboratory techniques.]** pp. 377. Bratislava: Slovenská Akadémia Vied. Kčs 85. [In Slovak.] **968**

This handbook contains, among others, chapters on the optical equipment used in helminthology, the preparation and examination of microscopic specimens, the preparation and fixation of macroscopic material, histological methods, faecal examination, counting and differentiation of eggs, immunological aspects of helminth infestation, dissection of worms, and nomenclature. These are followed by chapters and lists of parasitic worms in man and farm animals. There are 104 references and the subject index is adequate. The illustrations, numbering 246, and consisting of photographs and line drawings, are very clear.—E.G.

MAREK, J. & MÓCSY, J. (1956). Lehrbuch der klinischen Diagnostik der inneren Krankheiten der Haustiere. **[Text-book of the clinical diagnosis of internal diseases of domestic animals.]** pp. xv+627. Jena: Gustav Fischer Verlag. 5th Edit. DM 40. **969**

This is the fifth edition revised by Mócsy of the standard work first published in 1911 by Marek, who died in 1952. The general arrangement of the subject matter of the previous edition [*V.B.* **21,** 3434] has been retained, although a number of changes and additions have been made. Chapters newly added include those on electrocardiography, liver function tests, examination of cerebrospinal fluid, urine, blood and blood groups. Others have been revised and brought up to date. Illustrations in the text, some in colour, number 536, of which 162 have been either substituted or newly added. There are 16 tables. Paper, print and general presentation of the book are of high quality.—E.G.

MAYNARD, L. A. [Professor of Nutrition and Biochemistry. Director of the School of Nutrition, Cornell University. Member, National Academy of Sciences.] & LOOSLI, J. K. [Professor of Animal Nutrition, College of Agriculture, Cornell University.] (1956). **Animal nutrition.** pp. vii+484. London (New York, Toronto): McGraw-Hill Book Company, Inc. 4th Edit. 56s. 6d. **970**

Many other text-books on animal nutrition have been published since the earlier edition of this work appeared, but none has yet replaced it. The general framework and character have been retained in the present edition. Much of the text has been revised, particularly that concerned with the functions, metabolism and requirement of amino-acids, vitamins and mineral elements. New material on the use of radioisotopes has been added, together with an entirely new chapter on "Antibiotics, hormones, and other growth regulating substances." Another useful feature is the inclusion, in a condensed form, of the nutrient requirements for pigs, cattle, sheep and poultry, as deter-

mined by the Committee on animal nutrition of the National Research Council. The number of references to original papers has also been increased, and at the same time brought up to date.

Those who have used the previous edition will already be aware of the concise and readable way in which the material is presented. It is not, and does not pretend to be, an exhaustive reference book on animal nutrition. It explains the experimental basis for much of the material which is given, and at the same time places a good deal of emphasis on its application in nutrition practice. It is therefore of special value to workers who are concerned with day to day problems in animal nutrition.

—W. H. PARR.

FOLLEY, S. J. [Head of the Physiology Department, National Institute for Research in Dairying, Shinfield, Reading, Berks.] (1956). **The physiology and biochemistry of lactation.** pp. vii + 153. Edinburgh (& London): Oliver & Boyd. 18s. 6d. **971**

This review originated as a series of lectures and forms a compact, balanced and comprehensive assessment of our knowledge in this field over the last twelve years. A large part is based on work done at the National Institute for Research in Dairying, Shinfield.

There are six chapters of about equal length. The first three deal with the possible influence of various hormones (prolactin, growth hormone, oestrogens, progesterone and adreno-corticoids) on the growth and development of the mammary gland, on the initiation of lactation and on the maintenance and augmentation of existing lactation.) The fourth discusses the neuro-hormonal reflex controlling milk ejection, and the myo-epithelial cells which are thought to express milk. The remaining two are almost entirely biochemical. The origins of the glycerol and fatty acids of milk are separately described the relevant distinctions between ruminant and non-ruminant clarified. In the final section probable mechanisms for the formation of lactose from glucose are given in considerable detail, together with evidence indicating that milk protein is derived from circulating amino-acids. No comments are made on the elaboration of the mineral constituents of milk. The author has been at pains to present all the important views on controversial subjects, even though in some instances this makes heavy reading. The printing, plates and numerous line illustrations are of the highest standard. Both subject and author indexes (with cross-references) are given.

This is a book which should be read and re-read by appropriate research workers, and by all those concerned with teaching physiology and biochemistry; it should be available for reference in libraries.—R. J. FITZPATRICK.

NACHMANSOHN, D. [Professor of Biochemistry, Columbia University College of Physicians and Surgeons.] & MERRIT, H. H. [Professor of Neurology, Columbia University College of Physicians and Surgeons.] (1956). **Nerve impulse. Transactions of the fifth conference, September 20, 21 and 22, 1954.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 256. New York: Josiah Macy, Jr. Foundation. $4.50. **972**

Subjects discussed were the brain stem and higher centres; the corticospinal system; properties of nerve impulses; monosynaptic reflex behaviour of individual spinal motor neurones; and some properties of excitable tissue.—R.M.

TILLMANN, H. (1956). Die Schwangerschaftsdiagnose beim Rind. **[Pregnancy diagnosis in cattle.]** pp. 107. Berlin (& Hamburg): Paul Parey. 5th Edit. DM. 9.60. **973**

This is the fifth, completely revised and enlarged edition of the work by Zieger, originally published in 1908. The subject matter is divided into three main sections dealing respectively with the anatomical structure of the genital system of the cow, its function and the methods of examination and diagnosis of pregnancy. The last-mentioned section contains chapters on external and internal examination methods, and diagnostic evaluation of certain symptoms; this is followed by a detailed month by month description of the signs to be seen in the pregnant cow until parturition. Diagnostic methods for early detection of pregnancy by chemical, optical, hormonal and other means are discussed briefly, and for their respective merits the reader is referred to the work by Cowie—Pregnancy Diagnosis Tests: A Review [*V.B.* **19,** 1126].—E.G.

COLIN, E. C. [Department of Zoology, Eastern Illinois State College, Charleston, Illinois.] (1956). **Elements of genetics. Mendel's laws of heredity with special application to man.** pp. xv + 498. London (New York, Toronto): McGraw-Hill Book Company, Inc. 3rd Edit. 43s. **974**

This text-book for students consists of

chapters on the life and work of Gregor Johann Mendel, followed by sections on dominance and the law of segregation, the law of independent assortment, chromosomes, genes, multiple alleles, linkage and crossing over, sex determination and differentiation, sex-linked heredity, effect of environment, mutation, inbreeding and crossbreeding, heredity in man, plants and domestic animals, and eugenics. There are appendixes consisting of Mendel's autobiography and the introduction to his work on plant hybrids, followed by a guide to laboratory exercises for students and a glossary of technical terms. The work is very well produced and indexed and profusely illustrated.—E.G.

THOMPSON, H. V. & WORDEN, A. N. (1956). **The rabbit.** pp. xii + 240. London: Collins. 16s. **975**

This monograph, published in the New Naturalist Series, is a comprehensive review of our present knowledge of the wild rabbit. The authors have recently been engaged in research programmes on the rabbit problem, and their experience has contributed much information, particularly to the chapters on reproduction, behaviour, and control. Other chapters deal with physiology, ecology, diseases and parasites, myxomatosis, and damage to crops. There is an appendix on legislation regarding rabbits.

—M.G.G.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BUGHER, J. C., COURSAGET, J. & LOUTIT, J. F. (Edited by). (1956). **Progress in nuclear energy. Series VII. Medical sciences. Volume I.** pp. xii + 165. London: Pergamon Press Ltd. 42s.

CRAMPTON, R. W. (1956). **Applied animal nutrition. The use of feedstuffs in the formulation of livestock rations.** pp. xx + 458. San Francisco: W. H. Freeman & Co. (London: Bailey Bros & Swinfen, Ltd.) 55s.

FLORKIN, M. (1956). Aspects biochimiques communs aux êtres vivants. Introduction à la biochimie générale des organismes. **[Biochemical properties common to living things. An introduction to general biochemistry.]** pp. xxxi + 425. Paris: Masson et Cie. Fr. 3600.

GOERTTLER, V. & KRÜGER, W. (1956). Rindertuberkulose — Hilf mit bei der Tilgung. **[Bovine TB.—assist in its eradication.]** pp. 40. Leipzig: S. Hirzel Verlag. DM 3.

GREENSTEIN, J. P. & HADDOW, A. (Edited by). (1956). **Advances in cancer research. Volume IV.** pp. ix + 416. London (& New York): Academic Books Ltd. $10.00

LAPAGE, G. (1956). **Mönnig's veterinary helminthology and entomology.** pp. xv + 511. London: Baillière, Tindall & Cox. 4th Edit. 42s.

MOZLEY, A. (1957). **Liver-fluke snails in Britain.** pp. xii + 55. London: H. K. Lewis & Co. Ltd. 9s.

MELLAN, I. & MELLAN, E. (1957). **Poisons and antidotes.** pp. 161. London: Staples Press Ltd. 21s.

RUSSELL, F. C. & DUNCAN, D. L. (1956). **Minerals in pasture: deficiencies and excesses in relation to animal health.** pp. 170. Farnham Royal: Commonwealth Agricultural Bureaux. Technical Communication No. 15. of the Commonwealth Bureau of Animal Nutrition. 2nd Edit. 25s.

SCHEUNERT, A., BRUGGMANN, J., HORN, V. & HILL, H. (Edited by). (1957). Scheunert-Trautmann, Lehrbuch der Veterinär-Physiologie. **[Scheunert-Trautmann's text-book of veterinary physiology.]** pp. xii + 580. Berlin (& Hamburg): Paul Parey. DM 58.

SCHMIDT, J., v. PATOW, C. & KLIESCH, J. (1957). Züchtung, Ernährung und Haltung der landwirtschaftlichen Haustiere. Besonderer Teil. **[Breeding, nutrition and husbandry of farm animals. Part II. Special.]** pp. viii + 415. Berlin (& Hamburg): Paul Parey. 7th Revised Edit. DM 29.

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius;* so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius,* where titles of all publications indexed by the bureau are fully cross-referenced.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

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1. **CLASSIFICATION OF TRYPANOSOMES.**
   C. A. Hoare, *Wellcome Laboratories of Tropical Medicine, London.*

2. **CHEMOTHERAPY OF ANIMAL TRYPANOSOMIASIS.**
   D. G. Davey, *Imperial Chemical (Pharmaceuticals) Ltd, Wilmslow, Cheshire.*

3. **SALINE CONTENT OF DRINKING WATER FOR LIVESTOCK.**
   A. W. Peirce, *C.S.I.R.O., University of Adelaide, Australia.*

4. **RINDERPEST: CONTROL BY MODIFIED VIRUS VACCINE (Part II).**
   J. G. Brotherston, *A.R.D.A. Moredun Institute, Edinburgh.*

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